UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

Reply To
Attn Of: OEA - 095 May 11, 2000

MEMORANDUM

SUBJECT: TSCA PCB Inspection Reports for Kingdome Investigation (Total Reclaim and Turner Construction)

FROM: M. Eileen Hileman
Investigations and Engineering Unit

TO: Dan Duncan
PCB Program Manager

Attached are the inspection reports for the two files generated as a result of the investigation of the complaint concerning PCBs in the Kingdome at the time of implosion. The only violation noted during the investigation was that Total Reclaim did not mark the drums containing PCB ballasts with a start accumulation date when the first ballast was placed in the drum. The ballast observed during the inspection were not from those removed from the Kingdome. I found no evidence that PCBs were in the Kingdome at the time of the implosion.

TOTAL RECLAIM INC.
SEATTLE, WASHINGTON
TSCA /PCB INSPECTION

FACILITY: Total Reclaim, Inc.
4400 4th Street
Seattle, Washington 98124

MAIL ADDRESS: P.O. Box 94291
Seattle, Washington 98124

CONTACT: Jeff Zirkle
Phone: (206) 343-7443
Fax: (206) 343-7445
E-mail: jzirkle@totalreclaim.com

Craig Lorch
Ecolights Northwest
Phone: (206) 324-1247
Fax: (206) 343-7445
E-mail: clorch@totalreclaim.com

INSPECTION DATE: April 21, 2000

REPORT DATE: April 21, 2000
REPORT AMENDED: April 24, 2000
April 27, 2000

INSPECTOR: Eileen Hileman
Investigations and Engineering Unit
Office of Environmental Assessment
EPA Region 10

Emad Shahin
Investigations and Engineering Unit
Office of Environmental Assessment
EPA Region 10

BACKGROUND

A search of EPA Region 10 TSCA PCB files indicates that this facility was previously inspection in November 1998. The April 21, 2000, inspection was initiated as the result of a

tip/complaint that PCB ballasts had been in place at the time the Seattle Kingdome was imploded. The complaint was received in the IEU office on April 20, 2000. Phone interviews were conducted with Tom Kuffel, King County Prosecutors Office (Environmental Division); Steve Woo, Washington State Public Stadium Authority, and Gus Sestrap, Turner Construction. Washington State Public Stadium Authority had assumed ownership of the Kingdom from King County shortly before demolition began. Turner Construction was in charge of the demolition and building the new stadium on the same site. Turner Construction contracted with Aman Environmental Construction for demolition of the facility. Aman Environmental Construction contracted with Total Reclaim and EcoLights Northwest (a Total Reclaim subsidiary) for removal of lamps, ballasts and fixtures including high density discharge lamps, fluorescent straight tubes, plastic coated lamps, compact flourescent, exit signs, thermostat bulbs, PCB ballasts and Non-PCB ballasts, in addition to refrigeration and HVAC and Bleacher Hydraulic System work.

ENTRY/INTRODUCTION

On April 21, 2000, at 12:30 p.m. Eileen Hileman and Emad Shahin arrived at the offices of Total Reclaim and its subsidiary EcoLights Northwest. Both inspectors presented credentials to Jeff Zirkle and Craig Lorch, co-owners of the facility. Ms. Hileman explained her intention to conducted a TSCA/PCB inspection. Ms. Hileman prepared and presented the TSCA Notice of Inspection and TSCA Confidentiality Notices to Mr. Lorch and Mr. Zirkle. Mr. Lorch read and signed the TSCA Notice of Inspection and TSCA Confidentiality Notice, and retained a copy for his records. The TSCA Notice of Inspection and Confidentiality Notice are appended to the inspection report as Attachment I.

PRE-INSPECTION CONFERENCE & RECORDS REVIEW

Mr. Lorch and Mr. Zirkle were cooperative and concerned that their companies were in some way being accused of environmental wrong doing. Ms. Hileman explained the nature of EPA's investigation into the complaint and how EPA would proceed. Mr. Zirkle had prepared additional documentation concerning the work performed by their company at the Kingdome prior to its implosion. Mr. Lorch acknowledged that some of the light fixtures in the "light ring" were in place at the time of the implosion. However, he noted that those fixtures were relamped two years ago as part of a requirement of Sports law and that none of the ballasts contained PCB capacitors. Mr. Zirkle provided a copy of the Light Ring High Access Working Procedure Safety Plan which clearly states the lights in the light ring were non-PCB. A copy of that document is appended to this inspection report as Attachment II.

Mr. Zirkle explained that their contract with Aman Environmental Construction clearly spelled out the responsibilities of Total Reclaim with regard to the lighting:

1. On site labor to remove lamp, ballast and fixture

2. Recycle all mercury bearing lamps and ballast

High Intensity Discharge Lamps	Exit Signs
Fluorescent straight tubes	Thermostat Bulbs
Plastic Coated Lamps	PCB Ballast
Compact Fluorescent	Non-PCB ballast

3. Provide documentation (manifest) ballast and lighting disposal/recycling

4. Provide Transportation of fixture, lamps and ballast to their Seattle recycling facility.

5. Transportation of lights and ballast to Seattle facility.

A copy of the proposal submitted by Total Reclaim to Aman Environmental Construction outlining these duties is appended to this inspection report as Attachment III.

Mr. Zirkle stated that in order to bid the job, he conducted a preliminary walk through of the facility to try and establish a count of the equipment. Mr. Zirkle stated that no one supplied his company with a accurate or complete set of plans concerning exact numbers of ballasts, lights, etc. Mr. Zirkle stated that he interviewed employees (electricians, architects, etc.) to try and determine the extent and number he was dealing with. However, again no firm numbers were provided.

Mr. Zirkle stated that once work began and more areas became available for walk through the scope of the work increased. According to Mr. Zirkle, the work was done by quadrants and was made more difficult by the fact that many contractors/sub-contractors were working in the same area. Mr. Zirkle stated that in one instance TLH Demolition began operating demolition equipment ahead of Mr. Zirkle's crew on the 300 level. Mr. Zirkle requested that TLH stop work to allow Total Reclaim staff to retrieve ballasts and lamps. According to Mr. Zirkle all ballasts and lamps were retrieved and the ballasts were non-PCB.

Mr. Zirkle stated that to the best of his knowledge no PCB ballasts were left on site at the time of the implosion. Mr. Zirkle explained that the Kingdome demolition project was unique for his firm due to limited knowledge provided about the facility, limited access, safety considerations, etc. In addition to the removal work, Mr. Zirkle also entered into a limited agreement with Christopher Ragen, President, Monumental Publishing with regard to shared profits of any light fixtures sold. According to Mr. Zirkle the lights in the light ring were valuable and could have been resold. Mr. Ragen had buyers who would have purchased the fixtures. Mr. Zirkle and Mr. Lorch realized too late into the project that money could have been

made in the re-sale value of the these lights. However, due to many constraints, among them the fact that Aman and the demolition crew were late in wiring the explosives, this prevented Total Reclaim from removing many of the valuable, non-PCB lights fixtures in the light ring and reselling them. Mr. Zirkle provide copies of three letters from Chris Ragen noting that he had orders for more lights. Copies of this correspondence is appended to this inspection report as Attachment IV. Mr. Zirkle also provided a list of purchasers of the lights that were removed and resold. A copy of that list is appended to this inspection report as Attachment V.

Mr. Zirkle also provided a schematic of the Kingdome showing how the Kingdome was divided into quadrants for the purpose of the demolition work. The schematic is appended to this inspection report as Attachment VI.

I asked Mr. Zirkle for copies of the manifests for the disposal of the PCB ballasts that were removed from the Kingdome. The manifest copies provided by Mr. Zirkle are appended to this inspection report as Attachment VII. According to Mr. Zirkle, the mixed ballasts were stored in drums in a container on the floor of the Kingdome. Ms. Hileman asked what was meant by "mixed ballasts". Mr. Zirkle explained that the ballasts were not sorted (non-PCB/PCB) until the ballasts were brought to the Total Reclaim facility. There they were sorted into drums, properly labeled and then shipped from the Total Reclaim facility. According to Mr. Zirkle that is why Total Reclaim and not the Kingdome is listed as the generator on the manifests in Attachment VII. Mr. Lorch stated that this is the standard manner in which Total Reclaim handles their manifesting. According to Mr. Lorch by doing the sorting and shipping from the Total Reclaim facility and listing Total Reclaim as the generator, Total Reclaim is able to protect their client list from competitors.

I asked Mr. Zirkle if he would be willing to provide EPA with a signed statement outlining Total Reclaims involvement in the removal of the lights and fixtures at the Kingdome. Mr. Zirkle agreed to do so. Mr. Zirkle also provided copies of photographs showing work at the Kingdome and the types of light fixtures they were dealing with. These photos are appended to this inspection report as Attachment VIII.

FIELD INSPECTION

We proceeded to the work areas where Mr. Zirkle showed the inspectors examples of the lights removed from the Kingdome. Photograph 1 shows the type of light fixtures that were in the light ring within the Kingdome. These lights that were removed contained non-PCB ballasts. Photograph 2 shows an type of hanging lamp that was also in the Kingdome. Photographs 3 and four show a non-PCB capacitor and cover. Photograph 5 shows Mr. Zirkle demonstrating how the light fixtures could be opened (the fixture was hinged) so that the bulbs could be removed prior to implosion. Photograph 6 shows the remaining excess empty drums that were used to store and transport mixed ballasts during the removal work at the Kingdome.

Photograph 7 shows an drum containing PCB ballasts (not from the Kingdome). I noted that there was no start accumulation date on the drum. Mr. Zirkle explained that the facility doesn't mark the drum until they move it to long term storage. I explained that the drum should be marked with a start date when the first PCB ballast is placed in the drum. I went over the marking and storage provisions of the PCB regulations with Mr. Zirkle. Mr. Zirkle agreed that the facility had mis-interpreted that portion of the regulations and would begin putting start dates on the drums when the first PCB ballast was placed into the drum for disposal.

CLOSE OUT BRIEFING

We returned to the office and I issued a Receipt for Documents for the documents Mr. Zirkle had provided. The Receipt for Documents is appended to this report as part of Attachment I.

APRIL 24, 2000

On April 24, 2000, I received a signed letter from Mr. Zirkle outlining Total Reclaim's removal activities at the Kingdome. After reading the letter I called Mr. Zirkle and asked for clarification of one point in the letter. Mr. Zirkle then resubmitted the letter via fax with the clarification in bold print. The letters are appended to this inspection report as Attachment IX.

APRIL 27, 2000

On April 27, 2000, I received a fax from Steve Woo, Washington Public Stadium Authority, informing me that he would be providing EPA with a written statement from Bobby Richards, former Maintenance Supervisor for the Kingdome which stated the ballasts in the light ring contained non-PCB capacitors. Mr. Woo provided a draft of the letter. Mr. Woo also enclosed pages from the "Architectural, Mechanical, Electrical, Plumbing Due Diligence Study for the Kingdome which was prepared for King County by HOK Sports Facilities on March 25, 1996, which states the ballasts in the light rings were replaced in 1996, thus confirming Mr. Zirkle's statement that the ballasts in the light ring that he examined were fairly new and non-PCB.

ATTACHMENTS

1. Notice of Inspection, TSCA Confidentiality Notice
2. Light Ring High Access Plan
3. Total Reclaim's Proposed Plan for Removal of Lighting

4. Letters from Christopher Ragen, regarding buyers for the lights

5. List of Customers who purchased lights

6. Schematic of Kingdome quadrants

7. Manifests

8. Photographs provided by Total Reclaim

9. Letters from Jeff Zirkle (both original and revised)

10. Documentation submitted by Jeff Woo

5-11-00
DATE OF SUBMITTAL OF REPORT

M. Eileen Hileman
INSPECTOR'S SIGNATURE

ATT. I

United States Environmental Protection Agency
Washington, D.C. 20460

EPA

Toxic Substances Control Act

NOTICE OF INSPECTION

Form Approved
OMB No. 2070-0007
Approval Expires 10-31-92

1. Investigation Identification			2. Time	3. Firm Name
Date	Inspector No.	Daily Seq. No.		
4-21-00	16131	001	12:30pm	Total Reclaim INC.

4. Inspector Address	5. Firm Address
EPA R10 1200 Sixth Ave (OEA-095) Seattle, WA 98101	4400 4th Seattle, WA 98124 Mail P.O. Box 24994

REASON FOR INSPECTION

Under the authority of Section 11 of the Toxic Substances Control Act:

☒ For the purpose of inspecting (including taking samples, photographs, statements, and other inspection activities) an establishment, facility, or other premises in which chemical substances or mixtures or articles containing same are manufactured, processed or stored, or held before or after their distribution in commerce (including records, files, papers, processes, controls, and facilities) and any conveyance being used to transport chemical substances, mixtures, or articles containing same in connection with their distribution in commerce (including records, files, papers, processes, controls, and facilities) bearing on whether the requirements of the Act applicable to the chemical substances, mixtures, or articles within or associated with such premises or conveyance have been complied with.

☐ In addition, this inspection extends to *(Check appropriate blocks):*

☐ A. Financial data

☐ B. Sales data

☐ C. Pricing data

☐ D. Personnel data

☐ E. Research data

The nature and extent of inspection of such data specified in A through E above is as follows:

Certification

I certify that the statements I have made on this form and all attachments thereto are true, accurate, and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.

Inspector Signature		Recipient Signature	
M. Eileen Hileman		X	
Name		**Name**	
M. Eileen Hileman		X CRAIG LOZZH	
Title	**Date Signed**	**Title**	**Date Signed**
Inspector	4-21-00	X SEC/TREAS.	X 4-21-00

EPA 7740-3 Rev (8-91)

Inspection File

United States Environmental Protection Agency
Washington, D.C. 20460

EPA

Toxic Substances Control Act

NOTICE OF INSPECTION

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The public reporting burden for this collection of information is estimated to average 5 minutes per response. This estimate includes time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information to the Chief, Information Policy Branch (PM-223), US Environmental Protection Agency, 401 M Street, SW, Washington, DC 20460, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503, marked ATTENTION: Desk Officer for EPA.

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Inspector Signature		Recipient Signature	
M. Eileen Hileman			
Name		**Name**	
M. Eileen Hileman		x CRAIG LOACH	
Title	**Date Signed**	**Title**	**Date Signed**
Inspector	4-21-00	x SEC/TREAS.	x 4.21.00

EPA 7740-3 Rev (8-91)

Regional Office

United States Environmental Protection Agency
Washington, D.C. 20460

EPA

Toxic Substances Control Act

TSCA INSPECTION CONFIDENTIALITY NOTICE

Form Approved
OMB No. 2070-0007
Approval Expires 10-31-92

1. Investigation Identification			2. Firm Name
Date	Inspector No.	Daily Seq. No.	Total Reclaim Inc.
4-21-00	16131	001	
3. Inspector Name			4. Firm Address
M. Eileen Nileman			P.O. Box 24996 Seattle, WA 98124
5. Inspector Address			6. Chief Executive Officer Name
EPA R10 1200 Sixth Ave (OEA-095) Seattle, WA 98101			X JEFF ZIRKLE
			7. Title
			X PRESIDENT

TO ASSERT A CONFIDENTIAL BUSINESS INFORMATION CLAIM

It is possible that EPA will receive public requests for release of the information obtained during inspection of the facility above. Such requests will be handled by EPA in accordance with provisions of the Freedom of Information Act (FOIA), 5 USC 552; EPA regulations issued thereunder, 40 CFR Part 2; and the Toxic Substances Control Act (TSCA), Section 14. EPA is required to make inspection data available in response to FOIA requests unless the Administrator of the Agency determines that the data contain information entitled to confidential treatment or may be withheld from release under other exceptions of FOIA.

Any or all the information collected by EPA during the inspection may be claimed confidential if it relates to trade secrets or commercial or financial matters that you consider to be confidential business information. If you assert a CBI claim, EPA will disclose the information only to the extent, and by means of the procedures set forth in the regulations (cited above) governing EPA's treatment of confidential business information. Among other things, the regulations require that EPA notify you in advance of publicly disclosing any information you have claimed as confidential business information.

A confidential business information (CBI) claim may be asserted at any time. You may assert a CBI claim prior to, during, or after the information is collected. The declaration form was developed by the Agency to assist you in asserting a CBI claim. If it is more convenient for you to assert a CBI claim on your own stationery or by marking the individual documents or samples "TCSA confidential business information," it is not necessary for you to use this form. The inspector will be glad to answer any questions you may have regarding the Agency's CBI procedures.

While you may claim any collected information or sample as confidential business information, such claims are unlikely to be upheld if they are challenged unless the information meets the following criteria:

1. Your company has taken measures to protect the confidentiality of the information, and it intends to continue to take such measures.
2. The information is not, and has not been, reasonably obtainable without your company's consent by other persons (other than governmental bodies) by use of legitimate means (other than discovery based on showing of special need in a judicial or quasi-judicial proceeding).
3. The information is not publicly available elsewhere.
4. Disclosure of the information would cause substantial harm to your company's competitive position.

At the completion of the inspection, you will be given a receipt for all documents, samples, and other materials collected. At that time, you may make claims that some or all of the information is confidential business information.

If you are not authorized by your company to assert a CBI claim, this notice will be sent by certified mail, along with the receipt for documents, samples, and other materials to the Chief Executive Officer of your firm within 2 days of this date. The Chief Executive Officer must return a statement specifying any information which should receive confidential treatment.

The statement from the Chief Executive Officer should be addressed to:

and mailed by registered, return-receipt requested mail within 7 calendar days of receipt of the Notice. Claims may be made any time after the inspection, but inspection data will not be entered into the special security system for TSCA confidential business information until an official confidentiality claim is made. The data will be handled under the agency's routine security system unless and until a claim is made.

TO BE COMPLETED BY FACILITY OFFICIAL RECEIVING THIS NOTICE:	If there is no one on the premises of the facility who is authorized to make business confidentiality claims for the firm, a copy of this Notice and other inspection materials will be sent to the company's chief executive officer. If there is another company official who should also receive this information, please designate below.
I have received and read the notice.	

Certification

I certify that the statements I have made on this form and all attachments thereto are true, accurate, and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.

Signature		Name
Name		Title
X CRAIG LORCH		
Title	Date Signed	Address
X SEC/TREAS	4.21.00	

EPA 7740-4 Rev (8-91)

Inspection File

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Washington, D.C. 20460
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4/21/00	16131	001	
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M. Eileen Uileman			P.O. Box 24996 Seattle, WA 98124
5. Inspector Address			6. Chief Executive Officer Name
EPA R10 1200 Sixth Ave (OEA-095) Seattle, WA 98101			X JEFF ZIRKLE
			7. Title X PRESIDENT

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Signature		Name
Name X CRAIG LORCH		Title
Title X SEL/TRSAS	Date Signed 4.21.00	Address

EPA 7740-4 Rev (8-91)

Regional Office

United States Environmental Protection Agency
Washington, D.C. 20460

EPA

Toxic Substances Control Act

RECEIPT FOR SAMPLES AND DOCUMENTS

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OMB No. 2070-0007
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1. Investigation Identification			2. Firm Name
Date	Inspector No.	Daily Seq. No.	
4-21-00	16131	001	Total Reclaim
3. Inspector Address			4. Firm Address
EPA R10 1200 Sixth Ave (OEA-095) Seattle, WA 98101			P.O. Box 24996 Seattle, WA 98124

The documents and samples of chemical substances and/or mixtures described below were collected in connection with the administration and enforcement of the Toxic Substances Control Act.

Receipt of the document(s) and/or sample(s) described is hereby acknowledged:

No.	Description
1.	List of purchasers of lights/fixtures
2.	Correspondence from Chris Ragen.
3	6 Color photos
4.	5 photo copied photos
5.	Total Reclaim proposal to Aman.
6.	8 Manifests
7.	Quadrant Diagram
8.	Light Ring High Access Working Procedure.

By 4:00 pm April 24, 2000 Total Reclaim will provided by mail or fax a letter detailing the facility's knowledge of the removal of lamps, ballasts & fixtures from The Kingdome..

Optional:
Duplicate or split samples: Requested and Provided ☐ Not Requested ☐ NO SAMPLES

Certification

I certify that the statements I have made on this form and all attachments thereto are true, accurate, and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.

Inspector Signature		Recipient Signature	
M. Eileen Hileman		J. Z	
Name		Name	
M. Eileen Hileman		Jeff Burkett	
Title	Date Signed	Title	Date Signed
Inspector	4-21-00	President	4-21-00

EPA 7740-1 Rev (8-91)

Inspection File

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Inspector Signature		Recipient Signature	
M. Eileen Hileman			
Name		Name	
M. Eileen Hileman		J.H. Pirkl	
Title	Date Signed	Title	Date Signed
Inspector	4-21-00	President	4-21-00

EPA 7740-1 Rev (8-91)

Regional Office

ATT II

II

TOTAL RECLAIM INC.

REFRIGERANT SERVICES
P.O. BOX 24996, SEATTLE, WA. 98124 (206) 343-7443

February 10, 2000

Light Ring High Access Working Procedure Plan Addendum.

In an effort to provide a safe working environment for our employees Total Reclaim has developed a **Light Ring High Access Working Procedure Safety Plan Addendum** along with our standard company fall protection safety plan.

Description:
Approximately 1200 fixtures are positioned on the light ring on four different levels. Each fixture contains one 1,000 watt HID lamp, one non-PCB ballast and one starter. Each fixture weighs approximately 60 to 80 pounds.

Procedure:
Our intention is to lower each fixture via a belay devise along with 200' of 10 MM static line. A belay devise is typically used in recreational mountaineering to assist climbers in repelling off high vertical walls. We will use a Belay device as a breaking devise in the lowering the light fixtures. The Belay device will also act as an emergency-breaking device in the event of rapid decent of a light fixture.

We will operate three lines simultaneously. The individual operating the line in the middle will be designated as the team leader. His role will be to ensure the individual on his left and the one on his right have their lines properly secured. In addition the team leader will be in contact via radio with the floor observer. No lines will be lowered until the floor observer and the team leader cleared each work area.

Safety:
Total Reclaim employees will follow our standard fall protection plan enclosed.

Alternate:
In the event Total Reclaim is falling behind schedule designated by Amman Environmental. Total Reclaim employees will abort the above procedure and remove the HID lamps only.

TOTAL RECLAIM,INC.

KINGDOME

FALL PROTECTION PROGRAM & WORK PLAN

2,000

TOTAL RECLAIM INC.

REFRIGERANT SERVICES
P.O. BOX 24996, SEATTLE, WA. 98124 (206) 343-7443

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Light Ring High Access Working Procedure Plan Addendum.

In an effort to provide a safe working environment for our employees Total Reclaim has developed a **Light Ring High Access Working Procedure Safety Plan Addendum** along with our standard company fall protection safety plan.

Description:
Approximately 1200 fixtures are positioned on the light ring on four different levels. Each fixture contains one 1,000 watt HID lamp, one non-PCB ballast and one starter. Each fixture weighs approximately 60 to 80 pounds.

Procedure:
Our intention is to lower each fixture via a belay devise along with 200' of 10 MM static line. A belay devise is typically used in recreational mountaineering to assist climbers in repelling off high vertical walls. We will use a Belay device as a breaking devise in the lowering the light fixtures. The Belay device will also act as an emergency-breaking device in the event of rapid decent of a light fixture.

We will operate three lines simultaneously. The individual operating the line in the middle will be designated as the team leader. His role will be to ensure the individual on his left and the one on his right have their lines properly secured. In addition the team leader will be in contact via radio with the floor observer. No lines will be lowered until the floor observer and the team leader cleared each work area.

Safety:
Total Reclaim employees will follow our standard fall protection plan enclosed.

Alternate:
In the event Total Reclaim is falling behind schedule designated by Amman Environmental. Total Reclaim employees will abort the above procedure and remove the HID lamps only.

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1. Strategic Objectives of the Total Reclaim Fall Protection Program

- **Provide our employees with the appropriate fall protection equipment to insure their personal safety while on the job-site.**

- **Protect all our employees from suffering an on-the-job injury as a result of a fall.**

- **Maximize the productivity of our employees by avoiding the additional costs of replacing an injured employee.**

- **Maintain Total Reclaim's competitive position in the marketplace by controlling costs through effective safety practices.**

- **Fulfill Total Reclaim's responsibility as an employer and comply with the Washington Administrative Codes 296-155-24501 through 24525.**

2. Identification of the Fall Hazards in the Work Area

Each job-site usually has its own particular fall hazards sometime during the construction, repair or servicing process.

Possible Job-Site Fall Hazards will include:

Elevator Shaft	Scaffold over 10 ft.	Scaffold under 10 ft.
Exterior Scaffolding	Boom Lift	Scissor Lift
Rolling Scaffolding	Stairwell	Window Opening
Door Opening	Removed Door	Leading Edge
Outside Static Line	Perimeter Edge	Roof
Rolling Scaffold	Elevated Wall Pours	Tunnels
Tall Stagings	Manholes	Ditch Work
Underground Foundations	Structural Deck Work (Floor Slabs)	Ladders
Underside of Raised Roadway	Under Docks (Over Water)	

Notice:

It is important to keep in mind that there are Overhead Fall Hazards from materials which can be more prevalent on a job-site than actual fall hazards.

3. Methods of Fall Restraint and Fall Arrest Provided to the Workforce

The two type of systems that are implemented to protect workers from falling are:

1) Fall Restraint System - Equipment used to keep a person from reaching a falling point (i.e., edge of a roof).

This equipment includes: Scaffolding, Work Platforms with standard guardrails; or Approved safety belts (or harnesses) and lanyards attached to secure anchorage points; or Nets

2) Fall Arrest System - Equipment used to protect a person from falling more than six feet or from striking a lower object in the event of a fall, whichever distance is less.

This equipment includes: Class III approved full-body harnesses and lanyards properly secured to anchorage points or to lifelines; or safety nets, or catch platforms.

FALL PROTECTION

Fall Restraint Restrained from falling	**Fall Arrest** Stopped after the fall
Guardrails	Full-body Harness
Safety Belts/Harnesses	Safety Nets
Warning line System	Catch Platforms
OR Warning Line System and Safety Monitor	

3. Methods Continued .....

It is important for the worker to understand that adequate Fall Protection on a job-site may require more than one type of Fall Restraint or Fall Arrest. Additionally, it is imperative that the worker understand that to insure adequate Fall Protection throughout the course of an entire job, different methods may have to be utilized for the various stages or phases of a job.

The different types of Fall Protection Equipment include:

Full Body Harness
Lanyard
Lifeline
Horizonital Lifeline
Deceleration Device
Locking Snap Hooks
Safety Monitor
Catch Platform
Body Belt
Dropline
Restraint Line
Rope Grab
Shock Absorbing Lanyard
Safety Nets
Guard Rails
Scaffolding Platform

Proper System Use and Application:

Each employee is instructed on the proper use and application of whatever system is being used on the job-site. It is important that the employee understand that there are manufacturer's recommendations and limitations for Fall Protection Equipment. The recommendations and limitations that are taken into consideration by the company Safety Officer are:

1. The force measured during the sample test.
2. The maximum elongation measured for lanyards during the force test
3. The deceleration distance measured for deceleration devices during the force test
4. Caution statements on critical use limitations
5. Application limits of the system.
6. Proper hook-up, anchoring and tie-off techniques, including the proper dee-ring or other attachment point to use on the body harness for fall arrest.
7. Proper climbing techniques.
8. Methods of inspection, use, cleaning and storage.
9. Specific lifelines which may be used.

If you become unsure of the proper usage of any Fall Protection equipment while on the job-site you must immediately refer to the On-Site Fall Protection Work Plan or manufacturer's proper use instructions. If you are still unsure of the proper use after reading these instructions, STOP working on that particular task requiring fall protection equipment until you have spoken with your supervisor or company safety director.

3. Methods Continued .....

On every job-site there is a written Total Reclaim FALL PROTECTION WORK PLAN that has been specifically designed for that particular job by the company's Safety Director.

After completing the on-site Fall Protection orientation which will notify all workers of the fall hazards and fall protection requirements, it is the responsibility of each individual worker to adhere to the policies and procedures set forth; and to wear the company provided fall protection equipment.

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4. Correct Procedures for the Assembly, Disassembly, Inspection, and Maintenance of Fall Protection Systems

4.1 Assembly & Disassembly

Assembly and disassembly of all equipment will be done according to the manufacturers recommended procedures.

Additional or special instructions for different types of equipment will be supplied by the Safety Director.

Important: It is imperative that the employee maintain a fall protection system to prevent a fall while assembling or disassembling additional fall protection systems overhead or on different levels of the job-site.

4.2 Inspection of Equipment

To insure that no defective or damaged equipment would compromise the safety of the workforce, all fall protection is regularly inspected.

All components are checked for:

* Cuts
* Tears
* Abrasions
* Mold
* Undue Stretching
* Alterations
* Additions
* Damage due to deterioration
* Contact with fire, acids or other corrosives
* Loose or damaged mountings
* Distorted hooks or faulty hook springs
* Non-functioning parts
* Tongues unfitted to the shoulder of buckles
* Wearing or internal deterioration in the ropes

Any defective or damaged equipment will be tagged or marked as unusable, removed from the workplace and replaced with new equipment.

Inspection Schedule: The **safety director** will inspect all fall protection equipment on a **quarterly** basis, or more frequently if a particular job-site's hazards or conditions dictate.

Each **employee** is responsible for inspecting their respective equipment on a **daily** basis or prior to each usage.

4.3 Maintenance of Equipment

The manufacturers recommended maintenance of the equipment will be followed. Some of these include:

1) When not in use, keep fall protection equipment from being exposed to weather elements as much as possible.

2) Replacement of interchanging parts will be done on an as needed basis, based on the findings of equipment inspections.

3) Cleaning of the equipment will need to be done based on the different types of job-sites that the equipment is used on.

Maintenance Schedule:

The **safety director** will conduct maintenance on the equipment on a **quarterly** basis, or more frequently if usage dictates.

The **employee** must conduct maintenance on their equipment **prior to every use.** Any adjustments or replacement parts need to be installed before usage of the equipment occurs.

5. Correct Procedures for the Handling, Storage and Securing of Tools and Materials

All fall protection equipment will be kept in a designated place or in the job equipment shack.

It will be picked up from the shack/supervisor at the start of each work day by each using employee and returned after the shift is over.

Employees will advise the job supervisor of any damage to the equipment.

Tools will be secured as follows:

* Tool belts will be used to carry hand tools to the elevated work surface.
* Tools too large for the tool belt will be raised by rope & pulley.
* When hand tools are used, they will be returned to the tool belt immediately after use.
* Large hand tools, such as skillsaws, etc., will be secured to guard rails with the cable provided.
* Toe boards a minimum of 3 1/2" in height will be installed on all scaffolding to prevent tools and equipment from falling from scaffolding.
* Siding material will be raised to the work platform by crane and sling. No more than 2 stacks of material will be kept on the platform at any one time.
* Guard rails will be used on open sided floors or platforms to prevent tools or materials from falling.

6. Methods of Overhead Protection for Workers Below the Job-Site

It is important to realize that overhead hazards can present the same or even greater fall hazards on a job site than those associated with an individual falling off a platform, roof, ladder, etc..

To ensure the protection of workers below the the job-site, the following precautions must be followed.

* Hard hats are mandatory on all job sites with overhead hazards.

* Warning signs will be posted to caution workers and all visitors to the job site of overhead hazards and hard hat requirements.

* Toe boards at least 3 1/2 inches in height will be installed along the edge of scaffolding and walking surfaces for a distance suffeicient to protect workers below.

* The area under scaffolding will have a warning line installed to protect against other workers accidentally walking under it.

* The scaffolding will have # 18 screen installed between the toe board and the guard rail at all locations where workers must work below.

* The area above the scaffolding will be decked over at all points where the siding crew must work immediately under the roofing crew or other workers.

* Debris nets will be used when material is likely to fly or slip off overhead work levels.

* Where tools, equipment or materials are piled higher than the top of the toe board, paneling or screening or guard rails will be erected to protect workers below.

7. Method for Prompt, Safe Removal of an Injured Worker

In the event a crew member is injured, the following steps will be taken:

* The supervisor on the scene will determine if the area is safe for rescuers to enter.

* If the area is safe for entry, the supervisor or certified individual will administer first-aid.

* Upon initial survey, the supervisor or certified individual will determine whether to intiate emergency services by dialing 911.

* If the area is not safe to enter, immediately initiate emergency services by dialing 911.

* If an injured worker does not have life threatening injuries but does need medical attention, careful thought should be given to how the worker is moved based on their injuries. Several different methods can be used to move an injured worker from the immediate job site to ground level, which include:

  Lift Platform
  Crane with Cage Stretcher
  Conventional Stretcher carried by fellow workers

* In the event an injured worker has injuries that include suspected broken bones in the back or neck and is not in a life threatening situation, call 911 and have medical professionals transport the worker.

Job Site Rescue Equipment:

The safety director, prior to work crews beginning on a job site will determine the type of rescue equipment to be on-site and ensure it is present when the work begins.

Total Reclaim
Fall Protection Work Plan

Job Name: _____ **Job Number** _____ **Date:** _____

Job Address: _____ **Supervisor:** _____

City: _____ **Zip** _____ **Job Site Phone** _____

1. FALL HAZARDS IN THE WORK AREA

Scaffold over 10 ft. _____ Scaffold under 10 ft. _____

Exterior Scaffolding _____ Elevator Shaft _____

Boom Lift _____ Scissor Lift _____ Stairwell _____

Leading Edge _____ Open Sided Floor/Platform _____ Leading Edge _____

Outside Static Line _____ Window Opening _____ Roof _____

Perimeter Edge _____ Rolling Scaffold _____ Ladder _____

Other Fall Hazards in the Work Area _____

_____

2. METHOD OF FALL ARREST OR FALL RESTRAINT

Fall protection equipment required for this job site.

Full Body Harness _____ Body Belt _____

Lanyard _____ Drop Line _____

Life Line _____ Restraint Line _____

Horizontal Life Line _____ Rope Grab _____

Deceleration Device _____ Shock Absorbing Lanyard _____

Locking Snap Hooks _____ Safety Nets _____

Safety Monitor _____ Guard Rails _____

Catch Platform _____ Scaffolding Platform _____

Other Equipment Needed _____

3. ASSEMBLY, DISASSEMBLY, INSPECTION AND MAINTENANCE PROCEDURES

Assembly and disassembly of all equipment will be done according to manufacturer recommended procedures and/or company procedures.

Specific types of equipment on the job are: _____

_____

_____

_____

* A visual inspection of all equipment will be done daily or before each use.
* Any defective equipment will be tagged and removed from use immediately, and given to the supervisor for replacement.

The manufacturers recommendations for maintenance and inspection will be followed. These specific

recommendations are as follows: _____

_____

_____

_____

4. HANDLING, STORAGE AND SECURING OF TOOLS & MATERIALS

*** Tool belts will be used to carry hand tools to the elevated work surface.**
*** Tools too large for the tool belt will be raised by rope and pulley.**
*** When hand tools are used, they will be returned to the tool belt immediately after use.**
*** Large hand tools, such as skill saws, etc., will be secured to guard rails with the cable provided.**
*** Toe boards a minimum of 3 1/2 inches in height will be installed on all scaffolding and open sided floors**
*** Siding material will be raised to the work platform by crane and sling. No more than _____ stacks of material will be kept on the platform at any one time.**
*** Guard rails will be used on open sided floors or platforms to prevent tools or materials from falling.**

Other specific handling, storage and securing is as follows: _____

_____

_____

_____

5. OVERHEAD PROTECTION

To ensure the protection of workers below the job site, the following precautions must be followed:

* Hard hats are mandatory on all job sites with overhead hazards.
* Warning signs will be posted to caution workers and all visitors to the job site of overhead hazards and hard hat requirement.
* Toe boards at least 3 1/2 inches in height will be installed along the edge of scaffolding and walking surfaces for a distance sufficient to protect workers below.
* The area under scaffolding will have a warning line installed to protect against other workers accidentally walking under it.
* The scaffolding will have # 18 screen installed between the toe board and the guard rail at all locations where workers must work below.
* The area above the scaffolding will be decked over at all points where the siding crew must work immediately under the roofing crew or other workers.
* Debris nets will be used when material is likely to fly or slip off overhead work levels.
* Where tools, equipment or materials are piled higher than the top of the toe board, paneling or screening will be erected to protect workers below.

Additional overhead protection will include: _____

_____

_____

6. INJURED WORKER REMOVAL

In the event a crew member is injured, the following steps will be taken:

* The supervisor on the scene will determine if the area is safe for rescuers to enter.
* If the area is safe for entry, the supervisor or certified individual will administer first-aid.
* Upon initial survey, the supervisor or certified individual will determine whether to initiate emergency services by dialing 911.
* If the area is not safe to enter, immediately initiate emergency services by dialing 911.
* If an injured worker does not have life threatening injuries but does need medical attention, careful thought should be given to how the worker is moved based on their injuries.
* In the event an injured worker has injuries that include suspected broken bones in the back or neck and is not in a life threatening situation, call 911 and have medical professionals transport the injured worker.

Initiate Emergency Services: Dial 911

Phone Location _____ First Aid Kit Location _____

Other _____ Location _____

Other _____ Location _____

7. TRAINING & INSTRUCTION FOR ON-SITE WORK PLAN

All employees, prior to beginning their job assignment on this job site, have been trained on Total Reclaim's Fall Protection Program and the specific fall protection work plan for this job site.

This fall protection work plan is reviewed at the weekly crew/safety meeting and all employees are informed of any changes and additions.

Crew Member	Crew Member
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Job Supervisor: _____ Date: _____

9. Employee Training

9.1 Individual Employee Training

All Total Reclaim employees that work in environments where fall hazards exist will be trained and oriented on the company's Fall Protection Program.

They will be trained on:

1) The strategic objectives of Total Reclaim's Fall Protection Program

2) The various types of fall restraint and fall arrest methods and equipment.

3) Proper usage, installation, inspection and maintenance of equipment and systems.

4) When to use certain types of equipment over other types.

5) The different kind of combinations of protection.

6) The format of the Total Reclaim's Fall Protection Work Plan that is on each job site.

7) Their responsibility in ensuring that they follow the procedures and standards set forth in Total Reclaim's Fall Protection Program.

EMPLOYEE TRAINING ACKNOWLEDGMENT

I acknowledge that I have been trained and oriented on Total Reclaim's Fall Protection Program.

This training has included:

1) Strategic Objectives of the Fall Protection Program _____

2) Identifying fall hazards in the work area. _____

3) Information on the different methods of fall arrest and fall restraint available. _____

4) Instruction on the correct assembly, disassembly, inspection and maintenance of fall protection equipment and systems. _____

5) Information on the correct procedures for handling, storing and securing of tools and materials. _____

6) Information on the different methods of overhead protection. _____

7) Instruction on methods for the prompt and safe removal of an injured worker. _____

8) Review of the Total Reclaim Fall Protection Work Plan that is a specific plan for individual work sites and areas. _____

Employee Responsibilities

I understand that upon completing this training and instruction that it is my responsibility to wear and use all fall arrest and restraint equipment provided.

I understand that I am also responsible for conducting inspections on all of the fall arrest and restraint equipment used in my daily work prior to each usage.

I understand that I am to report any defective or broken equipment to the safety director and it will be replaced immediately.

I understand that Total Reclaim, in fulfilling its obligation as a responsible employer has gone through considerable time and expense to provide its work force with this program and equipment, and I promise to fulfill my part as a responsible employee by complying with the procedures and standards set forth in this program.

Employee Name: _____ Signature: _____

(Print clearly)

APPENDIX A

1. Safety Belt, Harness and Lanyard Inspection and Maintenance Program

1.1. ANSI Classification

Class I	Body Belts - used to restrain a person from falling
Class II	Chest Harness - used for restraint purposes, not for vertical free fall hazards
Class III	Full Body Harness - used for fall arrest purposes. Can also be used for fall restraint.
Class IV	Suspension/Position Belt - used to suspend or support the worker. If a fall arrest hazard exists, this must be supplemented by use of a safety harness.

1.2. Inspection Guidelines

To maintain their service life and high performance, all belts and harnesses should be inspected frequently. Visual inspections before each use is just common sense. Periodic tests by a trained inspector for wear, damage or corrosion should be a part of the safety program. Inspect your equipment daily and replace it if any of the defective conditions explained in this manual are found.

Belt inspection:

1. Beginning at one end, holding the body side of the belt toward you, grasp the belt with your hands six to eight inches apart. Bend the belt in an inverted "U" as shown. The surface tension resulting makes damaged fibers or cuts easier to see.

2. Follow this procedure the entire length of the belt or harness. Watch for frayed edges, broken fibers, pulled stitches, cuts or chemical damage.

3. Special attention should be given to the attachment of buckles and Dee Rings to webbing. Note any unusual wear, frayed or cut fibers, or distortion of the buckles or dees.

4. Inspect for frayed or broken strands. Broken webbing strands generally appear as tufts on the webbing surface. Any broken, cut or burned stitches will be readily seen. (See last page for detailed chart on visual inspection for chemical, heat and corrosive damage.)

5. Rivets should be tight and unmovable with fingers. Body side rivet base and outside rivet burr should be flat against the material. Bent rivets will fail, under stress.

   Especially note condition of Dee Ring rivets and Dee Ring metal wear pads (if any). Discolored, pitted or cracked rivets indicate chemical corrosion.

6. The tongue, or billet of the belts receives heavy wear from repeated buckling and unbuckling. Inspect for loose, distorted or broken grommets. Belts using punched holes without grommets should be checked for torn or elongated holes causing slippage of the buckle tongue.

2. FALL PROTECTION SYSTEM CONSIDERATIONS

Below are guidelines for worker protection where fall arrest or fall restraint systems are used. Some of this material may be suitable for adding to the written fall protection work plan specified in WAC 296-155-24505. Also reference WAC 296-24-87035, Appendix C.

2.1 Selection and Use Considerations

The kind of personal fall arrest system should match the particular work situation, and any possible free fall distance shall be kept to a minimum. Consideration should be given to the particular environment. For example, the presence of acids, dirt, moisture, oil, grease, etc., and their effect on the system, should be evaluated. Hot or cold environments may also have an adverse affect on the system. Wire rope should not be used where an electrical hazard is anticipated. As required by the standard, the employer must plan to have means available to promptly rescue an employee should a fall occur, since the suspended employee may not be able to reach a work level independently.

Where lanyards, connectors, and lifelines are subject to damage by work operations such as welding, chemical cleaning, and sandblasting, the component should be protected, or other securing systems should be used. The employer should fully evaluate the work conditions and environment (including seasonal weather changes) before selecting the appropriate personal fall protection system. Once in use, the system's effectiveness should be monitored. In some cases, a program for cleaning and maintenance of the system may be necessary.

2.2 Testing Considerations

Before purchasing or putting into use a personal fall arrest system, an employer should obtain from the supplier information about the system based on its performance during testing so that the employer can know if the system meets this standard. Testing should be done using recognized test methods. Part II of the Appendix C contains test methods recognized for evaluating the performance of fall arrest systems. Not all systems may need to be individually tested: the performance of some systems may be based on data and calculations derived from testing of similar systems, provided that enough information is available to demonstrate similarity of function and design.

2.3 Component Compatibility Considerations

Ideally, a personal fall arrest system is designed, tested, and supplied as a complete system. However, it is common practice for lanyards, connectors, lifelines, deceleration devices, and body harnesses to be interchanged since some components wear out before others. The employer and employee should realize that not all components are interchangeable. For instance, a lanyard should not be connected between a body harness and a deceleration device of the self-retracting type since this can result in additional free fall for which the system was not designed. Any substitution for change to a personal fall arrest system should be fully evaluated or tested by a competent person to determine that it meets the standard, before the modified system is put in use.

2.4 Employee Training Considerations

Thorough employee training in the selection and use of personal fall arrest systems is imperative. As stated in the standard, before the equipment is used, employees must be trained in the safe use of the system. This should include the following: Application limits; proper anchoring and tie-off techniques; estimation of free fall distance, including determination of deceleration distance, and total fall distance to prevent striking a lower level; methods of use; and inspection and storage of the system. Careless or improper use of the equipment can result in serious injury or death. Employers and employees should become familiar with the material in this Appendix, as well as manufacturer's recommendations, before a system is used. Of uppermost importance is the reduction in strength caused by certain tie-offs (such as using knots, tying around sharp edges, etc.) and maximum permitted free fall distance. Also, to be stressed are the importance of inspections prior to use, the limitations of the equipment, and unique conditions at the worksite which may be important in determining the type of system to use.

2.5 Instruction Considerations

Employers should obtain comprehensive instructions from the supplier as to the system's proper use and application, including, where applicable:

a. The force measured during the sample force test.
b. The maximum elongation measured for lanyards during the force test.
c. The deceleration distance measured for deceleration devices during the force test.
d. Caution statements on critical use limitations.
e. Application limits.
f. Proper hook-up, anchoring and tie-off techniques, including the proper dee-ring or other attachment point to use on the body harness for fall arrest.
g. Proper climbing techniques.
h. Methods of inspection, use, cleaning, and storage.
i. Specific lifelines which may be used. This information should be provided to employees during training.

2.6 Inspection Considerations

As stated in WAC 296-24-87035(6), personal fall arrest systems must be regularly inspected. Any component with any significant defect, such as cuts, tears, abrasions, mold, or undue stretching, alterations or additions which might affect its efficiency; damage due to deterioration; contact with fire, acids, or other corrosives; distorted hooks or faulty hook springs; tongues unfitted to the shoulder of buckles; loose or damaged mountings; non-functioning parts; or wearing or internal deterioration in the ropes must be withdrawn from service immediately, and should be tagged or marked as unusable, or destroyed.

2.7 Rescue Considerations

As required by WAC 296-24-87035(5)(h) when personal fall arrest systems are used, the employer must assure that employees can be promptly rescued or can rescue themselves should a fall occur. The availability of rescue personnel, ladders or other rescue equipment should be evaluated. In some situations, equipment which allows employees to rescue themselves after a fall has been arrested may be desirable, such as devices which have descent capability.

2.8 Tie-off Considerations

a. One of the most important aspects of personal fall protection systems is fully planning for suitable anchorage points. Such planning should ideally be done before the structure or building is constructed so that anchorage points can be incorporated during construction for use later for window cleaning or other building maintenance. If properly planned, these anchorage points may be used during construction as well as afterwards.

b. Employers and employees should at all times be aware that the strength of a personal fall arrest system is based on its being attached to an anchoring system which does not significantly reduce the strength of the system (such as a properly dimensioned eye-bolt/snap hook anchorage). Therefore, if a means of attachment is used that will reduce the strength of the system, that component should be replaced by a stronger one, but one that will also maintain the appropriate maximum arrest force characteristics.

c. Tie-off using a knot in a rope lanyard or lifeline (at any location) can reduce the lifeline or lanyard strength by 50% or more. Therefore, a stronger lanyard or lifeline should be used to compensate for the weakening effect of the knot, or the lanyard length should be reduced (or the tie-off location raised) to minimize free fall distance, or the lanyard or lifeline should be replaced by one which has an appropriately incorporated connector to eliminate the need for a knot.

d. Tie-off of a rope lanyard or lifeline around an "H" or "I" beam or similar support can reduce its strength as much as 70% due to the cutting action of the beam edges. Therefore, use should be made of a webbing lanyard or wire core lifeline around the beam; or the lanyard or lifeline should be protected from the edge; or free fall distance should be greatly minimized.

e. Tie-off where the line passes over or around rough or sharp surfaces reduces strength drastically. Such a tie-off should be avoided or an alternative tie-off rigging should be used. Such alternatives may include use of a snap-hook/dee-ring connection, wire rope tie-off, and effective padding of the surfaces, or an abrasion-resistance strap around or over the problem surface.

f. Horizontal lifelines may, depending on their geometry and angle of sag, be subjected to greater loads than the impact load imposed by an attached component. When the angle of horizontal lifeline sag is less than 30 degrees, the impact force imparted to the lifeline by an attached lanyard is greatly amplified. For example, with a sag angle of 15 degrees, the force amplification is about 2:1 and at 5 degrees sag, it is about 6:1. Depending on the angle of sag, and the line's elasticity, the strength of the horizontal lifeline and the anchorages to which it is attached should be increased a number of times over that of the lanyard. Extreme care should be taken in considering a horizontal lifeline for multiple tie-offs. The reason for this is that in multiple tie-offs to a horizontal lifeline, if one employee falls, the movement of the falling employee and the horizontal lifeline during arrest of the fall may cause other employees to also fall. Horizontal lifeline and anchorage strength should be increased for each additional employee to be tied-off. For these and other reasons, the design of systems using horizontal lifelines must only be done by qualified persons. Testing of installed lifelines and anchors prior to use is recommended.

g. The strength of an eye-bolt is rated along the axis of the bolt and its strength is greatly reduced if the force is applied at angle to this axis (in the direction of shear). Also, care should be exercised in selecting the proper diameter of the eye to avoid accidental disengagement of snap-hooks not designed to be compatible for the connection.

h. Due to the significant reduction in the strength of the lifeline/lanyard (in some cases, as much as a 70% reduction), the sliding hitch knot should not be used for lifeline/lanyard connections except in emergency situations where no other available system is practical. The "one-and-three" sliding hitch knot should never be used because it is unreliable in stopping a fall. The "two-and-two", or "three-and-three" knot (preferable), may be used in emergency situations; however, care should be taken to limit free fall distance to a minimum because of reduced lifeline/lanyard strength.

2.9 Vertical Lifeline Considerations

As required by the standard, each employee must have a separate lifeline when the lifeline is vertical. The reason for this is that in multiple tie-offs to a single lifeline, if one employee falls, the movement of the lifeline during the arrest of the fall may pull other employees' lanyards, causing them to fall as well.

2.10 Snap-Hook Considerations

a. Although not required by this standard for all connections, locking snap-hooks designed for connection to suitable objects (of sufficient strength) are highly recommended in lieu of the non-locking type. Locking snap-hooks incorporate a positive locking mechanism in addition to the spring loaded keeper, which will not allow the keeper to open under moderate pressure without first releasing the mechanism. Such a feature, properly designed, effectively prevents roll-out from occurring.

b. As required by the standard WAC 296-24-87035(5)(a) the following connections must be avoided (unless properly designed locking snap-hooks are used) because they are conditions which can result in roll-out when a non-locking snap-hook is used:

* Direct connection of a snap-hook to a horizontal lifeline.
* Two (or more) snap-hooks connected to one dee-ring.
* Two snap-hooks connected to each other.
* A snap-hook connected back on its integral lanyard.
* A snap-hook connected to a webbing loop or webbing lanyard.
* Improper dimensions of the dee-ring, rebar, or other connection point in relation to the snap-hook dimensions which would allow the snap-hook keeper to be depressed by a turning motion of the snap-hook.

2.11 Free Fall Considerations

The employer and the employee should at all times be aware that a system's maximum arresting force is evaluated under normal use conditions established by the manufacturer, and in no case using a free fall distance in excess of 6 feet (1.8 m). A few extra feet of free fall can significantly increase the arresting force on the employee, possibly to the point of causing injury. Because of this, the free fall distance should be kept at a minimum, and, as required by the standard, in no case greater than 6 feet (1.8 m). To help assure this, the tie-off attachment point to the lifeline or anchor should be located at or above the connection point of the fall arrest equipment to harness. (Since otherwise additional free fall distance is added to the length of the connecting means (i.e. lanyard)). Attaching to the working surface will often result in a free fall greater than 6 feet (1.8 m). For instance, if a 6 foot (1.8 m) lanyard is used, the total free fall distance will be the distance from the working level to the body harness attachment point plus the 6 feet (1.8 m) of lanyard length. Another important consideration is that the arresting force which the fall system must withstand also goes up with greater distance of free fall, possibly exceeding the strength of the system.

2.12 Elongation and Deceleration Distance Considerations

Other factors involved in a proper tie-off are elongation and deceleration distance. During the arresting of a fall, a lanyard will experience a length of stretching or elongation, whereas activation of a deceleration device will result in certain stopping distance. These distances should be available with the lanyard or device's instructions and must be added to the free fall distance to arrive at the total fall distance before an employee is fully stopped. The additional stopping distance may be very significant if the lanyard or deceleration device is attached near or at the end of a long lifeline, which may itself add considerable distance due to its own elongation. As required by the standard, sufficient distance to allow for all of these factors must also be maintained between the employee and obstructions below, to prevent an injury due to impact before the system fully arrests the fall. In addition, a minimum of 12 feet (3.7 m) of lifeline should be allowed below the securing point of a rope grab type deceleration device, and the end terminated to prevent the device from sliding off the lifeline. Alternatively, the lifeline should extend to the ground or the next working level below. These measures are suggested to prevent the worker from inadvertently moving past the end of the lifeline and having the rope grab become disengaged from the lifeline.

2.13 Obstruction Considerations

The location of the tie-off should also consider the hazard of obstructions in the potential fall path of the employee. Tie-offs which minimize the possibilities of exaggerated swinging should be considered.

2.14 Other Considerations

Because of the design of some personal fall arrest systems, additional considerations may be required for proper tie-off. For example, heavy deceleration devices of the self-retracting type should be secured overhead in order to avoid the weight of the device having to be supported by the employee. Also, if self-retracting equipment is connected to a horizontal lifeline, the sag in the lifeline should be minimized to prevent the device from sliding down the lifeline to a position which creates a swing hazard during fall arrest. In all cases, manufacturer's instructions should be followed.

ATT III

III

TOTAL RECLAIM INC.

REFRIGERANT SERVICES
P.O. BOX 24996, SEATTLE, WA. 98124 (206) 343-7443

PROPOSAL

TO: Joe Capriola
Aman Environmental Construction
675 Hegenberger Road, Suite 210
Oakland CA 94621

DATE: January 17, 2000

PROJECT: Kingdome Lighting and Refrigeration Removal

PROPOSED: Total Reclaim, Inc. proposed the following:

LIGHTING:

- On-site labor to remove lamp, ballast and fixture.
- Recycle all mercury bearing lamps and ballast.

High Intensity Discharge Lamps	Exit Signs
Fluorescent straight tubes	Thermostat Bulbs
Plastic Coated Lamps	PCB Ballast
Compact Fluorescent	Non-PCB Ballast

- Provide documentation (Manifest) ballast and lighting disposal / Recycling.
- Provide Transportation of fixture, Lamps and Ballast to our Seattle facility.
- Transportation of lights and Ballast to our Seattle facility.

REFRIGERATION / HVAC:

- Recover refrigerant from all refrigerated fixed equipment on-site.
- Recover refrigerant per EPA specifications.
- Removal & disposal of refrigerated compressors.
- Provide on-site extrication of small semi fixed and portable equipment
- Transportation of equipment, refrigerant and CFC oil to our Seattle facility.

BLEACHER HYDRAULIC SYSTEMS:

- Remove Hydraulic Power units, Hoses and Ram.
- Dispose of Hydraulic oil in accordance to Local, State and Federal Regulations
- Dispose of Power units and associated parts

OPTIONAL TIME & MATERIAL:

- Hourly Cost $50.00
- Material Markup 15%

INSURANCE:

- Pollution $1,000,000.00
- Liability $1,000,000.00
- Vehicle $1,000,000.00

EXCLUSIONS: This proposal does not include the following.

Removal and handling of asbestos, lead, or other hazardous materials.
Disconnection of Electrical, Temporary Lighting,
Removal of CRM units and mechanical pipe
Disposal of water treatment i.e. glycol, rust inhibitors.
Removal of Centrifugal Chillers and Boilers

We propose to perform the work and/or provide the materials described above for the net price of: [redacted]

This proposal is hereby accepted and Total Reclaim is authorized to proceed with the work, subject to credit approval by Total Reclaim, Inc.

This proposal is valid unit: February 11, 2000

Aman Environmental Construction

Signature : [signature]

Name: Richard Riggs

Title: Operations Mgr.

Date: Jan. 17, 2000

Total Reclaim, Inc.

Signature: [signature]

Name: Jeff Zirkle

Title: Account Manager

Date: January 17, 2000

Att. IV

ATT IV

Monumental Publishing

333 South State Street
Suite 235
Lake Oswego, OR. 97034
(503) 417-5669
Fax 1-800-915-9505

March 16, 2000

To: Mr. Jeff Zirkle
C/o: Total Reclaim Inc.
P.O. Box 24996
Seattle WA., 98124
206-343-7443
206-271-2000

Dear Mr. Zirkle,

Here is the contact info for the two buyers that we currently have. They are:

20 Fixtures:

Kent Hojem
Western Washington Fair Association.
P.O. Box 430
Puyallup WA. 98371

253-845-1771
Fax 253-

60 Fixtures:

Paul Harrison
Kelly Arnold
The City of Laramie Wyoming
P.O. Box C
Laramie WY. 82073

307-721-5260
Fax 307-721-5284

I have called both of them and asked that they forward to me a basic letter of agreement on their letterhead confirming their order for these fixtures. It looks like Winnipeg is not going to place an order, however Portland should be letting me know tomorrow morning as to their situation.

Sincerely,

Christopher Ragen
President
Monumental Publishing

CITY OF LARAMIE
COMMUNITY SERVICES
PARKS & RECREATION
P.O. Box C
Laramie, WY 82073

(307) 721-5260
FAX (307) 721-5284
TDD (307) 721-5295

March 17, 2000

Mr. Jeff Zirkle
Total Reclaim Inc.
P.O. Box 24996
Seattle, WA 98124
(206) 343-7443
(800) 915-9505 fax

Dear Jeff:

This is a letter to confirm our plans to purchase 60 lights, that are currently pieces of the King Dome, the purchasing price of $124.98 a piece for a total of $7,498.80 to be billed by separate invoice. I would like to ship by ground, courier to be decided at a later date. I would also like to request that all 60 lights be the same brand, preferably Hubbell or GE.
You may direct questions to me at (307)721-5269 or to Kelly Arnold at (307) 721-5226.

Thank you,

Paul Harrison

March 16, 2000

Jeff Zirkle
Total Reclaim Inc.
P.O. Box 24996
Seattle, WA 98124

Dear Mr. Zirkle:

This correspondence will serve as notification that the Western Washington Fair Assn. will purchase 20 Kingdome field lights @ $125.00 per light.

Thank you for your attention concerning this matter.

Sincerely,

WESTERN WASHINGTON FAIR ASSN.

Kent Hojem
Assistant Manager

KH/mlm

ATT. II

ATT. V.

TOTAL RECLAIM INC.

REFRIGERANT SERVICES
P.O. BOX 24996, SEATTLE, WA. 98124 (206) 343-7443

April 21, 2000

Lights Sold

Fred Brownfield
RH Brownfield Racing
Phone 360-568-0572
Fax 360-568-0577

250 Fixtures and Lights sold

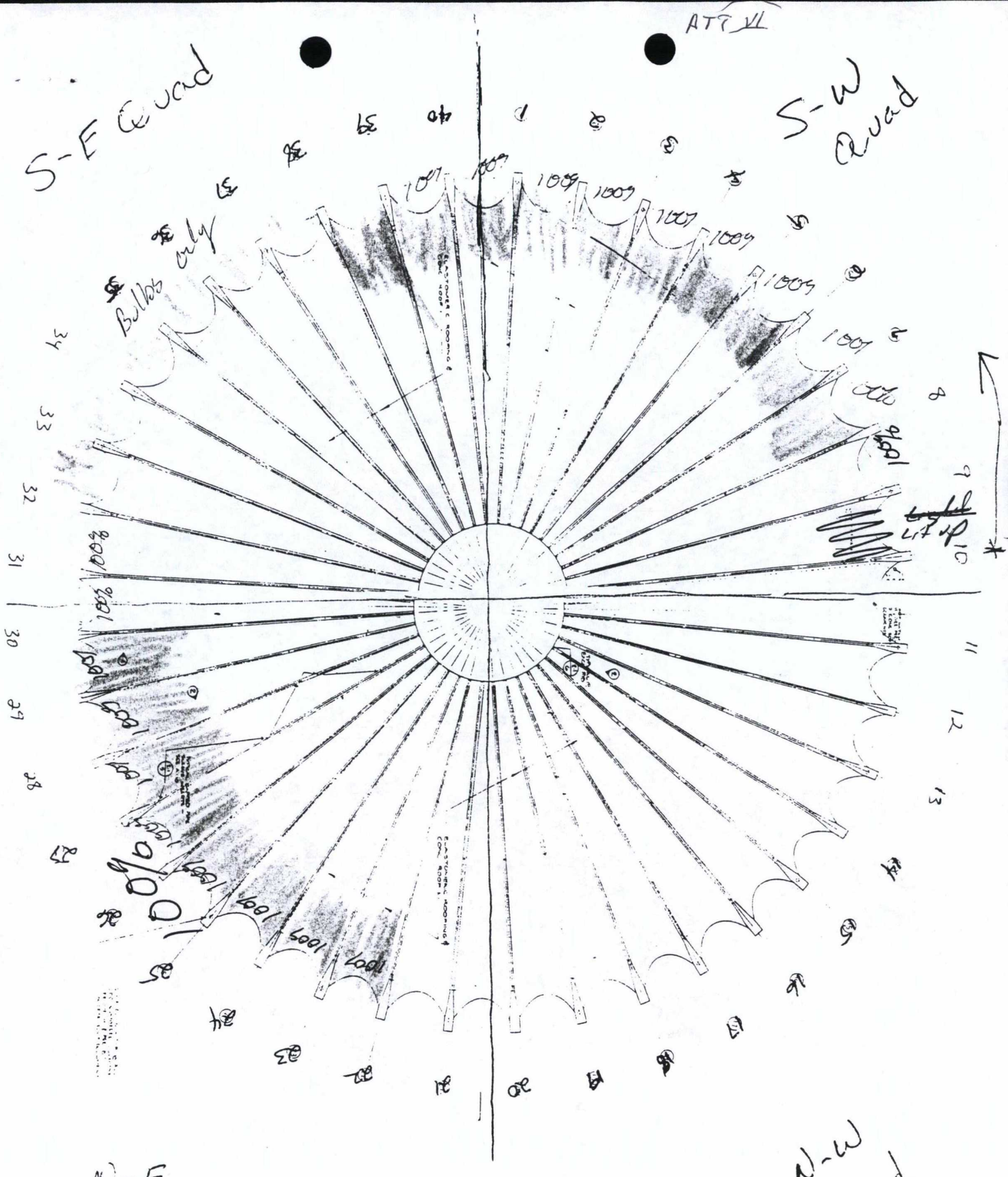
Jay Livingston
Woodburn Racing
Jay Livingston
Phone 503-982-4461
Fax 503-781-9312

100 Fixtures and Lights
Approximately 50 Lights

Billy Hendrix
PCH
Phone 206-417-3031
Fax 206-306-1387

214 Lights

ATT VII


S-E Quad
S-W Quad
N-E Quad
N-W Quad
100%

ATT VII

ATT V.11

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039.

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

40 CFR Part 761

3. Generator's Name and Mailing Address

4. Generator's Phone ( )

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name | 6. US EPA ID Number

NVR000000760

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name | 8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address | 10. US EPA ID Number

NJD986980233

G. State Facility's ID

H. Facility's Phone 718-128-4667

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RQ, Polychlorinated Biphenyls, Mixture, 9 UN2315, PG II		K22	DM	18590	lb.	None
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above

Used flourescent light ballasts containing small capacitors. Ballasts are being used for recycling. RQ, Polychlorinated Biphenyls, Mixture, 9 UN2315, PG II.

K. Handling Codes for Wastes Listed Above

(S) (P)

15. Special Handling Instructions and Additional Information

In Case of Emergency, Call Bell Circle, Inc. at (609) 778-1510.

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; **OR**, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month	Day	Year

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
S. Curtis		01	19	90

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
R. Winter	Ken Winter			

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Nicolas CASTILLO	Nicolas Castillo	01	19	90

Style F15 Labelmaster, An American Labelmark Co., Chicago, IL 60646 (800) 621-5808

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

PRINTED ON RECYCLED PAPER USING SOYBEAN INK

PRINTED WITH SOY INK

FILE COPY OR STATE COPY

TRANE™

18/570

	Customer		Weights
#1	Ecolites	Jim	720
#2	Ecolites	Jim	850
#3	Ecolites	Jim	670
#4	Ecolights		700
#5	11		750
#6	11		700
#7	Ecolites		730
#8	PORT		730
#9	Peace Heath		690
#10	11 11		540
#11	Ecolights		610
#12	Peace Heath		710
~~#13~~	~~Ecolights~~	~~Parsh~~	~~440~~
#13	Ecolights		730
#14	11		740
#15	11		616
#16	11		600
#17	11		1040
#18	~~Port of~~		780
#19	Port of Seattle		700

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039.

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. 40 CFR Part 761 | Manifest Document No. 1274 | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

GENERATOR

3. Generator's Name and Mailing Address
[illegible] Seattle
4xx 4th Ave, So. WA [illegible]
4. Generator's Phone ([illegible])

A. State Manifest Document Number
B. State Generator's ID
C. State Transporter's ID
D. Transporter's Phone 206-643-7245
E. State Transporter's ID
F. Transporter's Phone
G. State Facility's ID
H. Facility's Phone 718-328-4667

5. Transporter 1 Company Name [illegible]
6. US EPA ID Number [illegible]
7. Transporter 2 Company Name
8. US EPA ID Number
9. Designated Facility Name and Site Address
Full Circle, Inc.
300 Manida Street
Bronx NY 10474
10. US EPA ID Number NYD986980233

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RQ, Polychlorinated Biphenyls, Mixture, 9 UN2315, PG II		26	DM	1340	lbs.	None
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above
Used flourescent light ballasts containing small capacitors. Ballasts are being used for recycling. RQ, Polychlorinated Biphenyls, Mixture, 9 UN2315, PG II.

K. Handling Codes for Wastes Listed Above
(B) (E)

15. Special Handling Instructions and Additional Information
In Case of Emergency, Call Full Circle, Inc. at (800) 775-1516.

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; **OR**, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name | Signature | Month Day Year

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name | Signature | Month Day Year

Style F15 Labelmaster, An American Labelmark Co., Chicago, IL 60646 (800) 621-5808

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

GENERATOR COPY

2-29-00
Ballast Shipment

#1 - 670 lbs.
#2 - 670 lbs.
#3 - 900 lbs.
#4 - 650 lbs.
#5 - 710 lbs.
#6 - 650 lbs.
#7 - 700 lbs.
#8 - 650 lbs.
#9 - 690 lbs.
#10 - 640 lbs.
#11 - 700 lbs.
#12 - 740 lbs.
#13 - 770 lbs.
#14 - 660 lbs.
#15 - 670 lbs.
#16 - 690 lbs.
#17 - 720 lbs.
#18 - 880 lbs.
#19 890 lbs.
#20 690 lbs.
#21 660 lbs.
#22 710 lbs.
#23 660 lbs.
#24 700 lbs.
#25 690 lbs.
#26 640 lbs.

18,400

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039.

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No.
40 CFR Part 761 | 21115

2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

GENERATOR

3. Generator's Name and Mailing Address
[illegible] Lights
[illegible] 11th Ave, [illegible]
[illegible] Seattle
[illegible] WA 98134

4. Generator's Phone ([illegible])

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name
[illegible] Transportation

6. US EPA ID Number
NYR000000760

C. State Transporter's ID

D. Transporter's Phone [illegible]3-7245

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
Full Circle, Inc.
509 Manida Street
Bronx NY 10474

10. US EPA ID Number
NYD986980233

G. State Facility's ID

H. Facility's Phone 718-328-4667

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RQ, Polychlorinated Biphenyls, Mixture, 9 UN2315 , PG II		27	DM	1990	lb.	None
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above
Used flourescent light ballasts containing small capacitors. Ballasts are being used for recycling. RQ, Polychlorinated Biphenyls, Mixture, 9 UN2315 , PG II.

K. Handling Codes for Wastes Listed Above
(B) (R)

15. Special Handling Instructions and Additional Information
In Case of Emergency, Call Scott Larsen at: (909) 243-2536.

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; **OR**, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month Day Year

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day Year

Style F15 Labelmaster, An American Labelmark Co., Chicago, IL 60646 (800) 621-5808

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

GENERATOR COPY

ATT VIII

Light Ring

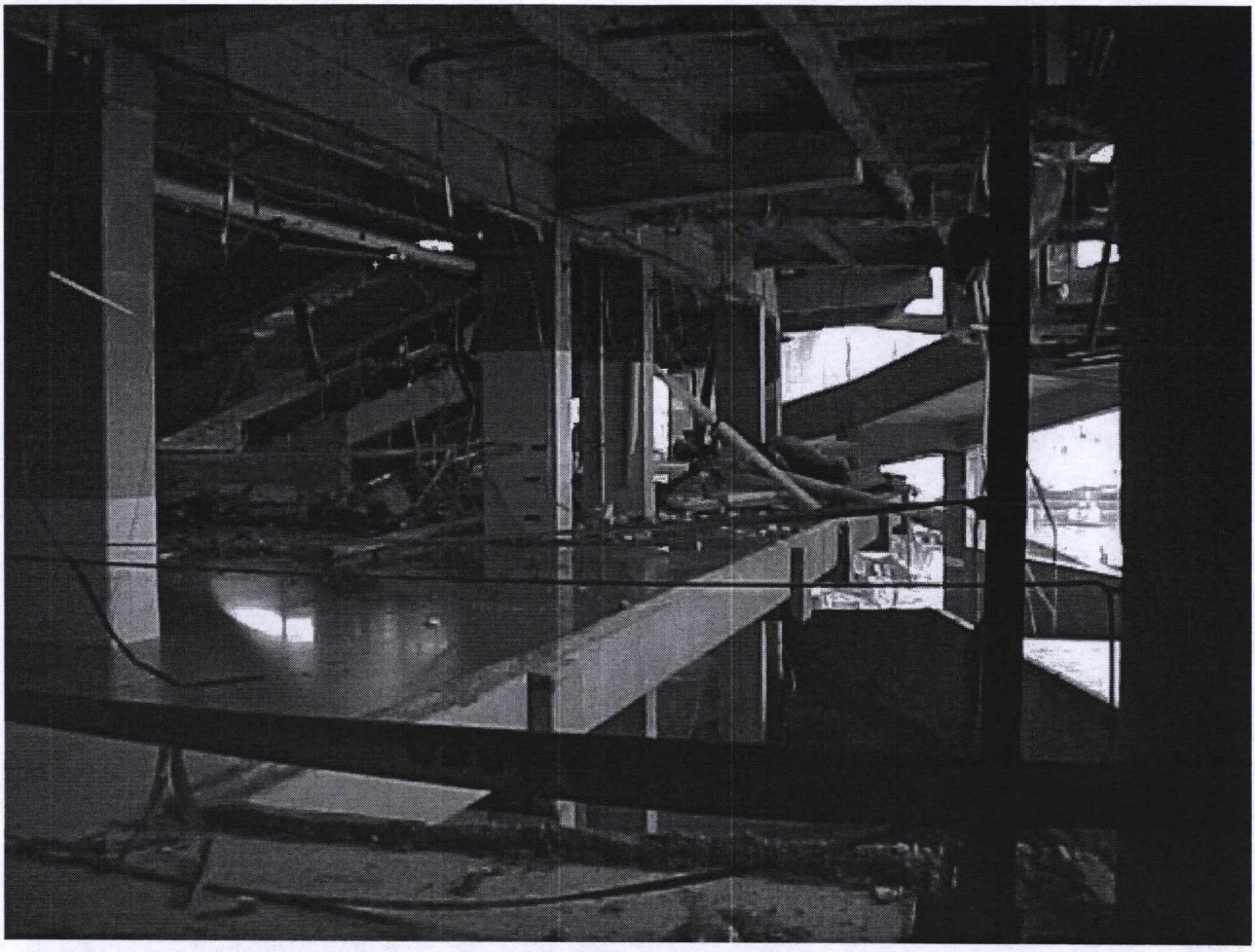
250 ft

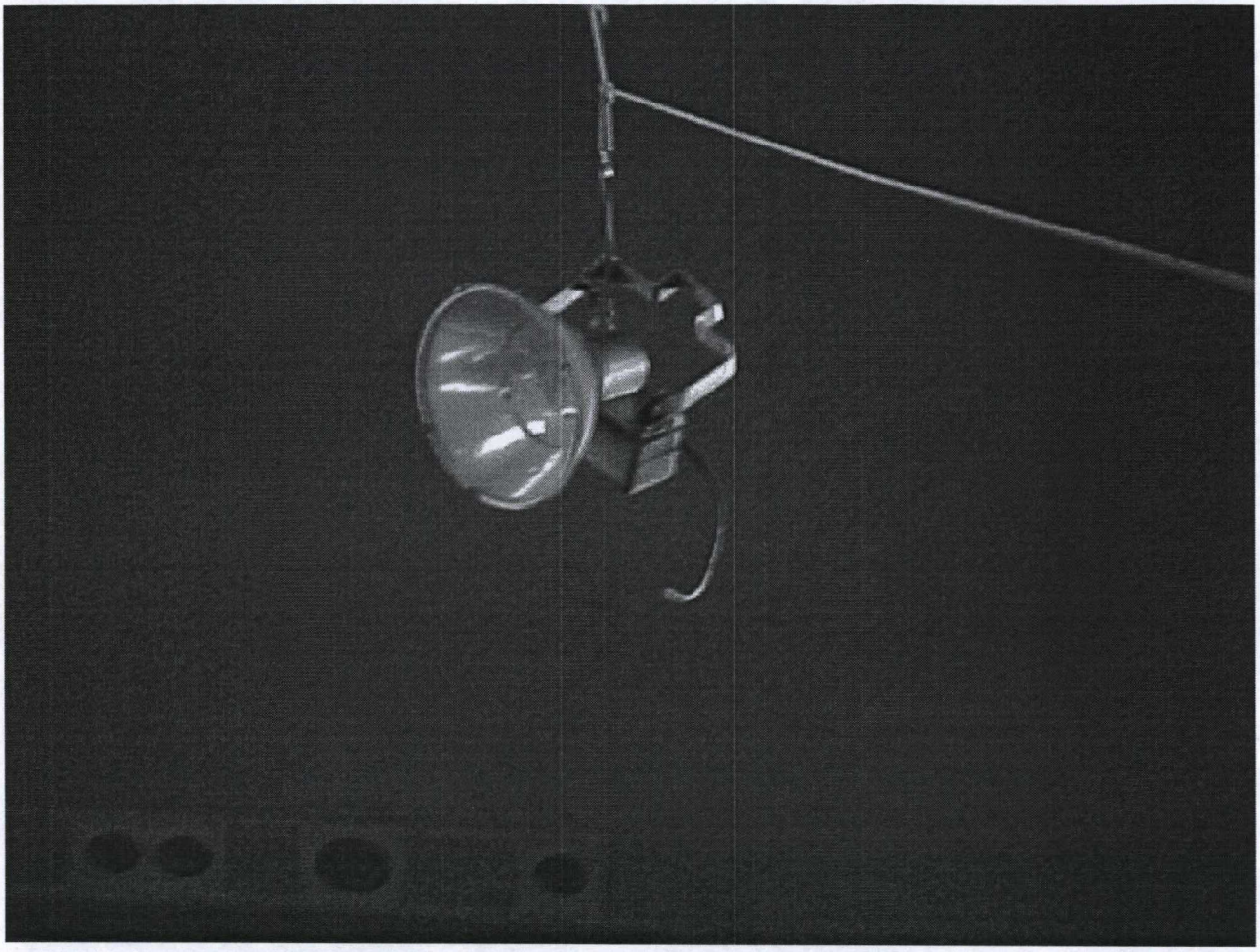
Flagpole

100 Level


Office DEPOT
Delta Air Lines
www.delta-air.com
Lucent Technologies
Bell Laboratories
Bellevue
Oldsmobile Cadillac
PROGRESSIVE
AUTO INSURANCE
Les Schwab
OUR BUSINESS IS
EARNING YOUR TRUST
PAINTS STAINS
WALLCOVERING
MITSUBISHI
TEXACO
CleanSystem3
GASOLINES
Budweiser
KIRO 7
Complete Northwest
News Coverage
24 FITNESS
1.800.204.2400
KINGDOME


PARKING
OFFICE





ATT. IX

ATT ~~XIII~~ IX

TOTAL RECLAIM INC.

REFRIGERANT SERVICES
P.O. BOX 24996, SEATTLE, WA. 98124 (206) 343-7443

FAX COVER

TOTAL PAGES 4

DATE: 4-24-00

TO: Eileen Hiltman

COMPANY: EPA

FAX: _____ PHONE: _____

FROM: ~~TM~~

TOTAL RECLAIM, INC.
FAX: (206) 343-7445
PHONE: (206) 343-7443

COMMENTS: Per our Discussion

Revised

TOTAL RECLAIM INC.

REFRIGERANT SERVICES
P.O. BOX 24996, SEATTLE, WA. 98124 (206) 343-7443

April 24, 2000

Ms. Eileen Hileman
Environmental Protection Agency
1200 Sixth Avenue (OEA-095)
Seattle, WA 98101

RE: Kingdome lamp, ballast and fixture removal

Dear Ms. Hileman:

Per your request, I have outlined our bid process and actual on-site abatement work done by our staff prior to the Kingdome implosion.

Total Reclaim offered our refrigeration and fluorescent light recycling services to four competing demolition contractors in April 1999. At that time, I was allowed to perform a brief site visit at the Kingdome with other potential sub-contractors. During our initial walk through, I was able to establish a very basic overview of the project. I saw a sample of a luxury suite, concession stand and a general public restroom. Although the price was negotiated several times during the project, we supplied our initial price bid on the basis of this visit and used this walk-through as the basis for our scope of work for the job.

During my preliminary walk through, I attempted to establish an approximate count of all equipment and material we would be expected to manage, including: refrigeration equipment, air conditions, water fountains, food service coolers, fluorescent and HID lamp fixtures. Some additional information was obtained from conversations with Kingdome employees. At no time were we supplied with an accurate count or complete plans detailing the numbers of equipment, lamps, or ballasts.

As the project progressed over the intervening 8 months between initial walkthrough and implosion, the scope of our work changed, both increasing as additional suites became available for inspection and more equipment identified, and decreasing as surplus equipment was auctioned off and removed from the site. Our final proposal was not agreed on and signed until January 17, 2000. Upon signing, we were operating under th assumption that there were approximately 900 suspected PCB ballasts located throughou the Kingdome complex.

TOTAL RECLAIM INC.
REFRIGERANT SERVICES
P.O. BOX 24996, SEATTLE, WA. 98124 (206) 343-7443

April 24, 2000

Ms. Eileen Hileman
Environmental Protection Agency
1200 Sixth Avenue (OEA-095)
Seattle, WA 98101

RE: Kingdome lamp, ballast and fixture removal

Dear Ms. Hileman:

Per your request, I have outlined our bid process and actual on-site abatement work done by our staff prior to the Kingdome implosion.

Total Reclaim offered our refrigeration and fluorescent light recycling services to four competing demolition contractors in April 1999. At that time, I was allowed to perform a brief site visit at the Kingdome with other potential sub-contractors. During our initial walk through, I was able to establish a very basic overview of the project. I saw a sample of a luxury suite, concession stand and a general public restroom. Although the price was negotiated several times during the project, we supplied our initial price bid on the basis of this visit and used this walk-through as the basis for our scope of work for the job.

During my preliminary walk through, I attempted to establish an approximate count of all equipment and material we would be expected to manage, including: refrigeration equipment, air conditions, water fountains, food service coolers, fluorescent and HID lamp fixtures. Some additional information was obtained from conversations with Kingdome employees. At no time were we supplied with an accurate count or complete plans detailing the numbers of equipment, lamps, or ballasts.

As the project progressed over the intervening 8 months between initial walkthrough and implosion, the scope of our work changed, both increasing as additional suites became available for inspection and more equipment identified, and decreasing as surplus equipment was auctioned off and removed from the site. Our final proposal was not agreed on and signed until January 17, 2000. Upon signing, we were operating under the assumption that there were approximately 900 suspected PCB ballasts located throughout the Kingdome complex.

TOTAL RECLAIM INC.
REFRIGERANT SERVICES
P.O. BOX 24996, SEATTLE, WA. 98124 (206) 343-7443

April 24, 2000

Ms. Eileen Hileman
Environmental Protection Agency
1200 Sixth Avenue (OEA-095)
Seattle, WA 98101

RE: Kingdome lamp, ballast and fixture removal

Dear Ms. Hileman:

Per your request, I have outlined our bid process and actual on-site abatement work done by our staff prior to the Kingdome implosion.

Total Reclaim offered our refrigeration and fluorescent light recycling services to four competing demolition contractors in April 1999. At that time, I was allowed to perform a brief site visit at the Kingdome with other potential sub-contractors. During our initial walk through, I was able to establish a very basic overview of the project. I saw a sample of a luxury suite, concession stand and a general public restroom. Although the price was negotiated several times during the project, we supplied our initial price bid on the basis of this visit and used this walk-through as the basis for our scope of work for the job.

During my preliminary walk through, I attempted to establish an approximate count of all equipment and material we would be expected to manage, including: refrigeration equipment, air conditions, water fountains, food service coolers, fluorescent and HID lamp fixtures. Some additional information was obtained from conversations with Kingdome employees. At no time were we supplied with an accurate count or complete plans detailing the numbers of equipment, lamps, or ballasts.

As the project progressed over the intervening 8 months between initial walkthrough and implosion, the scope of our work changed, both increasing as additional suites became available for inspection and more equipment identified, and decreasing as surplus equipment was auctioned off and removed from the site. Our final proposal was not agreed on and signed until January 17, 2000. Upon signing, we were operating under the assumption that there were approximately 900 suspected PCB ballasts located throughout the Kingdome complex.

Low Elevation Material Removal
We began by removing interior lamps and ballasts from the SW quadrant on all floors. Our crew proceeded in a counter clock-wise rotation around the entire structure over the next four weeks. All interior lamps and ballasts were removed from the arena level, 100, 200, 300, suites, pressbox, and vendor areas. Simultaneously, our crew performed recovery of refrigerants and removal of refrigeration equipment from the site.

Medium Elevation Material Removal
This work entailed removing exterior lighting and display signs throughout the complex, including lamps on the exterior roof, above and behind the scoreboard, above the aisles, and on the exterior ramps and walkways. In order to remove these lamps and ballasts, our employees used 20' man lifts and 45' boom lifts for this work. This work occurred over the entire 6 weeks of the project.

High Elevation Material Removal
In the final two weeks of our activities on the site, we removed fixtures and lamps from the interior light ring. This work entailed operating a crew of five removing and hand-lowering lamps or fixtures from the light ring, some 200 feet above the stadium floor.

We were informed by stadium personnel that all light ring lamps and ballasts had been changed in order to meet National Football League (NFL) and Major League Baseball (MLB) lighting requirements several times since the original construction of the building. Although we never received any documentation verifying this information, we validated this information from dates marked on the fixtures and by opening sample HID fixtures and inspecting to see that they contained only non-PCB capacitors.

Our crew only removed and lowered whole fixtures if we had a buyer identified for the fixture. Otherwise, we removed bulbs from the fixtures and lowered them to the floor. The remaining fixtures, without bulbs, remained on-site through implosion of Kingdome.

Handling and Management Techniques
Our Kingdome staff was trained in identifying suspected PCB containing ballasts and proper handling techniques. We had a secure trailer on the site where all lamps and ballasts were stored after removal before transport to our facility. In the trailer were labeled 55 gallon drums for both PCB and non-PCB ballasts.

Incidents
To my knowledge, only one incident occurred during the demolition that could have resulted in our not securing and properly managing all suspected PCB containing ballasts. On approximately January 28th, TLH Demolition staff began operating demolition equipment on the 300 level in advance of our crew. When we became aware of the situation, we requested the prime demolition contractor, Aman Environmental, to call TLH out of the area and prevent this from occurring in the future. I personally inspected and assisted my crew in retrieving all lamps and ballast **(per my phone discussion with Eileen Hileman 04/24/00, I clarified these were non PCB ballast)**

that could be recovered from the debris pile. I noted this incident to Aman and our employees in our daily report sheet.

Our work on the Kingdome site was limited to recovery of refrigerants, removal of refrigeration equipment, removal of fluorescent lamps, removal of PCB and non-PCB ballasts, and transport of these materials to our facility for further recycling. Nonetheless, over the course of 6 weeks on site, our staff expended 853 employee hours at prevailing wages and spent $18,000 on supplies and equipment rentals to perform our task.

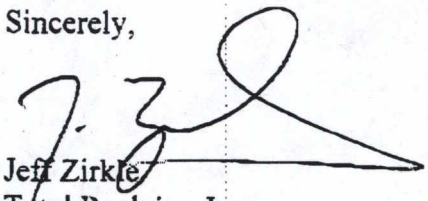
The Kingdome demolition project was unique for us. We had a very limited amount of information for a project of this magnitude. Throughout the project, there were limitations on the areas of the building we were able to work, initially because of locked doors, and later because of falling debris from crews working above us. As always, the health and safety of our crew and other crews on the site were of primary concern on a daily basis. To the best of our ability, any and all risks associated with our scope of work, both safety and environmental, were identified and resolved by Total Reclaim, Aman Environmental, and Turner Construction.

To the best of my knowledge, no PCB ballast was left on-site at the time of the implosion of the Kingdome. I believe that when Total Reclaim's crew left the job site, we had both fulfilled our contractual obligation to Aman Environmental and Turner Construction, and had operated in complete compliance with all environmental laws and best management practices for managing hazardous materials.

If you have any further questions, please call me at (206) 343-7443 or e-mail me at jzirkle@totalreclaim.com

Thank you for your consideration.

Sincerely,



Jeff Zirkle
Total Reclaim, Inc.

CC: John Farrell - Turner Construction
Bill Torres - Aman Environmental Construction

TOTAL RECLAIM INC.

REFRIGERANT SERVICES
P.O. BOX 24996, SEATTLE, WA. 98124 (206) 343-7443

FAX COVER

DATE: 4-24-00 TOTAL PAGES 4

TO: Eileen Hilemn

COMPANY: EPA

FAX: _____ PHONE: _____

FROM: TM

TOTAL RECLAIM, INC.
FAX: (206) 343-7445
PHONE: (206) 343-7443

COMMENTS: Per our Discussion

Revised

TOTAL RECLAIM INC.
REFRIGERANT SERVICES
P.O. BOX 24996, SEATTLE, WA. 98124 (206) 343-7443

April 24, 2000

Ms. Eileen Hileman
Environmental Protection Agency
1200 Sixth Avenue (OEA-095)
Seattle, WA 98101

RE: Kingdome lamp, ballast and fixture removal

Dear Ms. Hileman:

Per your request, I have outlined our bid process and actual on-site abatement work done by our staff prior to the Kingdome implosion.

Total Reclaim offered our refrigeration and fluorescent light recycling services to four competing demolition contractors in April 1999. At that time, I was allowed to perform a brief site visit at the Kingdome with other potential sub-contractors. During our initial walk through, I was able to establish a very basic overview of the project. I saw a sample of a luxury suite, concession stand and a general public restroom. Although the price was negotiated several times during the project, we supplied our initial price bid on the basis of this visit and used this walk-through as the basis for our scope of work for the job.

During my preliminary walk through, I attempted to establish an approximate count of all equipment and material we would be expected to manage, including: refrigeration equipment, air conditions, water fountains, food service coolers, fluorescent and HID lamp fixtures. Some additional information was obtained from conversations with Kingdome employees. At no time were we supplied with an accurate count or complete plans detailing the numbers of equipment, lamps, or ballasts.

As the project progressed over the intervening 8 months between initial walkthrough and implosion, the scope of our work changed, both increasing as additional suites became available for inspection and more equipment identified, and decreasing as surplus equipment was auctioned off and removed from the site. Our final proposal was not agreed on and signed until January 17, 2000. Upon signing, we were operating under the assumption that there were approximately 900 suspected PCB ballasts located throughout the Kingdome complex.

Low Elevation Material Removal
We began by removing interior lamps and ballasts from the SW quadrant on all floors. Our crew proceeded in a counter clock-wise rotation around the entire structure over the next four weeks. All interior lamps and ballasts were removed from the arena level, 100, 200, 300, suites, pressbox, and vendor areas. Simultaneously, our crew performed recovery of refrigerants and removal of refrigeration equipment from the site.

Medium Elevation Material Removal
This work entailed removing exterior lighting and display signs throughout the complex, including lamps on the exterior roof, above and behind the scoreboard, above the aisles, and on the exterior ramps and walkways. In order to remove these lamps and ballasts, our employees used 20' man lifts and 45' boom lifts for this work. This work occurred over the entire 6 weeks of the project.

High Elevation Material Removal
In the final two weeks of our activities on the site, we removed fixtures and lamps from the interior light ring. This work entailed operating a crew of five removing and hand-lowering lamps or fixtures from the light ring, some 200 feet above the stadium floor.

We were informed by stadium personnel that all light ring lamps and ballasts had been changed in order to meet National Football League (NFL) and Major League Baseball (MLB) lighting requirements several times since the original construction of the building. Although we never received any documentation verifying this information, we validated this information from dates marked on the fixtures and by opening sample HID fixtures and inspecting to see that they contained only non-PCB capacitors.

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If you have any further questions, please call me at (206) 343-7443 or e-mail me at jzirkle@totalreclaim.com

Thank you for your consideration.

Sincerely,

Jeff Zirkle
Total Reclaim, Inc.

CC: John Farrell - Turner Construction
Bill Torres - Aman Environmental Construction

Contractor's Daily Report

AMAN ENVIRONMENTAL CONSTRUCTION, INC.

Washington State Football / Soccer Stadium
221 South King Street
Seattle, WA. 98104

Project # 99-1235
Tel: 206-381-8665 Fax: 206-587-0983

Aman Environmental Construction, Inc.

Date: 1/31/00 **Contractor:** Total Reclaim, Inc. **Report No.:** 6

Daily Work Description

Provide a brief description of daily work performed:

Worked on Arena Level Remove CFC units + Removed Lights + Ballast on Column #20 - 9 Columns to Completion should Be A.M 02/00

worked on level 100 Remove Portable CFC Units currently on Column #31 will Be done 02/01

Manpower and Equipment

Provide a detailed list of manpower and equipment resources. The Trade field refers to type of manpower, i.e. Carpenter, Electrician etc. The Classification field refers to qualifications, i.e. Foreman, Journeyman, Apprentice etc.

Qty	Trade	Classification	Qty	Equipment
1	Laborer	Foreman	2	Forklift
5	Laborer	Journeyman	2	SCISSOR Lifts
			1	45' Boom
			1	Utility Vehicle
			2	Generators
			2	CFC Recovery Units

Manpower Units: Each per Day **Equipment Units:** Each per Day

Events or Issues

Provide a description of any significant events or issues to report. Include quantities and units if applicable:

Note TLH soft Demo Section #1 - #32 300 Level will have to pull out Ballast + Lamps out of Debris pile Note: Unsafe possible injuries may occur to employee from

February 1, 2000

RE: KINGDOME DAILY TASK

As you know the job appears to change on a daily basis. As of January 31st I was informed that Aman and TLH would like to demo the whole arena and 100 level. These areas will look similar to column #9-#10.

Also be advised that TLH is getting very anxious. They have moved ahead of us in a couple of areas 300 level and upper press level. We now have to extricate directional signs from column 1-32. Please do not take any chances and try to retrieve our material from any dangerous debris pile. If you have any questions please get Alan or myself.

For the record I am under the impression we are on schedule. Current Status: We are on column #20 on the interior arena level and we need to get to column #11 or 10 more columns to finish the arena level. 100 level: Started on #10 and currently on #32 or 18 more columns to complete this level.

Rick H.	Continue on the 100 level, continue to shuttle equipment down to staging area
Bill S.	Continue on the 100 level continue to shuttle equipment down to staging Area.
Craig S.	Continue on the arena level. After completion start removing exterior lights from the SE quadrant or #40 - #31 Note be advised I am under the impression that there should be approximately 120 lamps per quadrant.
James S.	Continue on the arena level. After completion move up to the 100 level.
Rich G.	Continue on the arena level. After completion move up to the 100 level.
Alan	Assist on the arena and 100 level. Note we need to recover remaining split AC units Also need to genie lift small hydronic unit from the arena level column #10

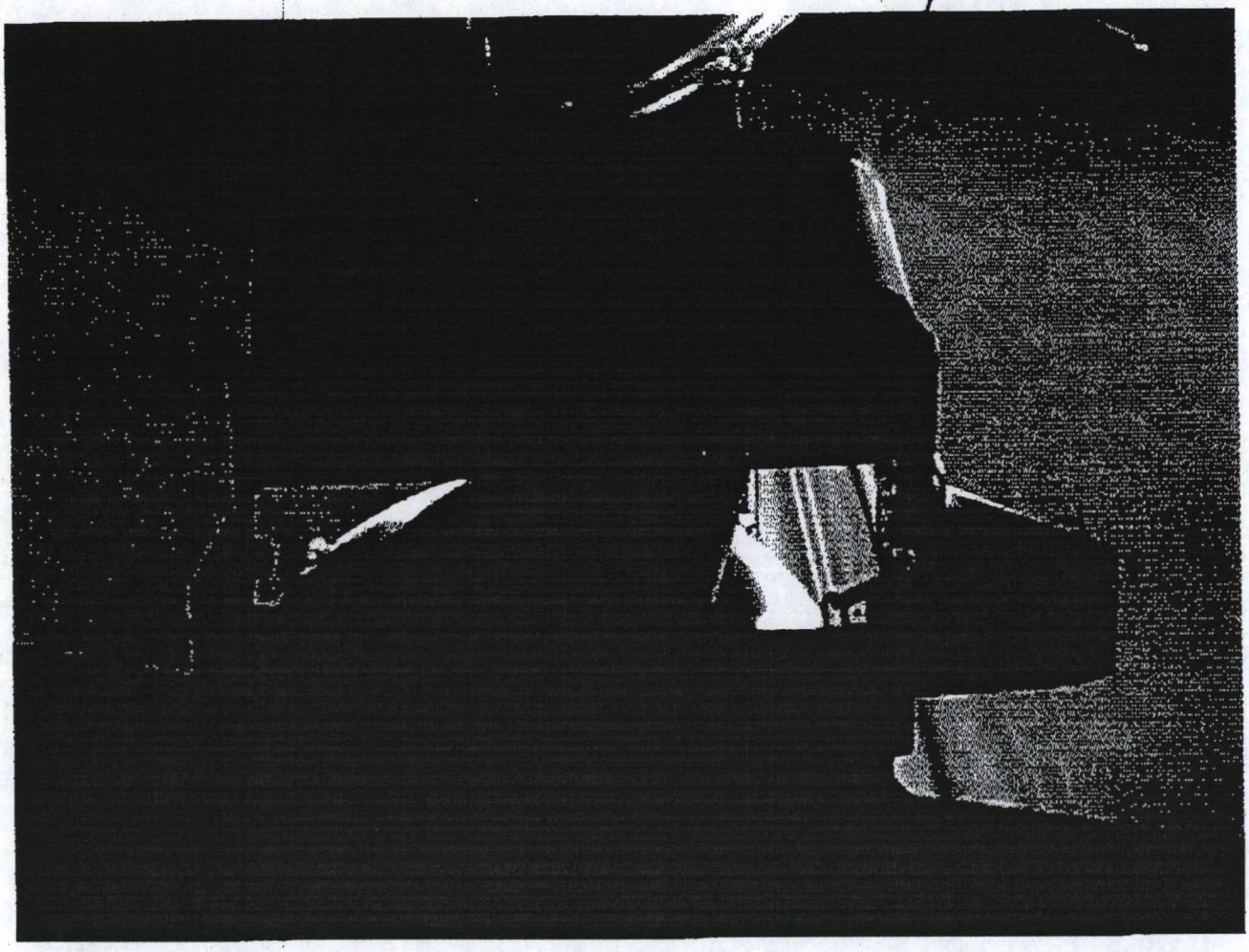
I will make arrangements to day to get another pickup from the shop and Riverside

Any questions, please see me.

Thanks

JSZ

93 Dodge



TOTAL RECLAIM INC.

REFRIGERANT SERVICES
P.O. BOX 24996, SEATTLE, WA. 98124 (206) 343-7443

FAX COVER

TOTAL PAGES 7

DATE: 4-24-00

TO: Eileen Hileman.

COMPANY: EPA

FAX: _____ PHONE: _____

FROM: Jeff Zielke

TOTAL RECLAIM, INC.
FAX: (206) 343-7445
PHONE: (206) 343-7443

COMMENTS: Per your Request

787

ATT V

WASHINGTON STATE
PUBLIC STADIUM AUTHORITY

P.O. Box 4280
401 Second Avenue South, Suite 520
Seattle, Washington 98104-0280

Phone: (206) 205-8600

FAX: (206) 205-8604

Fax

To: EILEEN HILEMAN **From:** STEVE WOO

Fax: 553-8210 **Phone:**

Company: **Date:**

Re: PCB INFO - KINGDOME **Pages:**

☐ Urgent ☑ For Review ☐ Please Comment ☐ Please Reply ☐ Please Recycle

HI EILEEN —

I'M HAVING A BIT OF DIFFICULTY GETTING AHOLD OF THE PERSON I NEED TO SIGN A "STATEMENT OF KNOWLEDGE" LETTER. (WHEN THE KINGDOME CLOSED IN JANUARY, THE 70+ EMPLOYEES ALL STARTED WORKING IN OTHER PLACES)

COULD YOU LOOK OVER LETTER WITH "DRAFT" MARKED ON IT TO MAKE SURE THE INFO MEETS YOUR NEEDS?

ALSO, ATTACHED INFO ENTITLED "ARCHITECTURAL ... DUE DILIGENCE STUDY" IS WHERE I FOUND INFO ABOUT THE LIGHTS

STEVE WOO 205-8645

EILEEN HILEMAN

April 25, 2000

DRAFT

Eileen Hileman
EPA Region X. Investigations and Engineering Unit
M/S OEA 095
1200 6th Ave
Seattle, WA 98109

Dear Ms Hileman,

In response to a request from Mr. Steve Woo with the Washington State Public Stadium Authority, I am providing you the following information related to the Kingdome light ring.

I was the Maintenance Superintendent of the Kingdome for 3 years preceding its closure this past January. Prior to that, I was the Kingdome's maintenance foreman for approximately 8 years, and I am familiar with the general history and maintenance activities conducted in the building.

In response to Mr. Woo's request, I can state to the best of my knowledge that the light fixtures in the light ring were:

a) uniform fixtures at the time of the closure of the dome;
b) were all replaced around 1994 as part of a capital improvement project; and
c) not PCB-containing fixtures.

I hope this helps in resolving your investigation. If you have any further questions, it would be easiest to contact Mr. Woo at 206-205-8645 in order to facilitate contacting me.

Sincerely,

Bobby Richards
King County Department of Transportation

FOR:
EILEEN HILEMAN

IX.E.3

ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING DUE DILIGENCE STUDY

FOR

THE KINGDOME

Prepared For:

King County
Seattle, Washington

Prepared By:

HOK Sports Facilities Group
323 West 8th Street
Suite 700
Kansas City, Missouri 64105

REFERENCE NUMBER 94-450-10

March 25, 1996

FOR:
EILEEN HILLMAN

IX.E.3

ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING DUE DILIGENCE STUDY

Table of Contents

FOR:
EILEEN HALEMAN

F. ELECTRICAL SYSTEMS:

1. Summary of findings:

The electrical service for the stadium is provided from Seattle City Light (SCL) from dual underground 24 KV utility feeders that enter the site from the South side off Royal Brougham Avenue. The primary feeders enter switch and transformer Vault #1 and are then routed underground to five SCL transformer vaults which are adjacent to five, main electrical rooms. These are interconnected by five plug-in type bus ducts. The bus ducts are installed in a ring bus fashion around the Arena Level. Switches on the bus duct provide 480 Volt power to feeders that go up through the building to a distribution system of panels and 208/120 Volt transformers (photo E-1). The bus duct is indirectly exposed to the weather and make-shift drip pans consisting of fiberglass sheeting have been installed at several locations to protect the bus from water lines that cross over it or leaking expansion joints(photo E-2). Recent testing was done on the five main switchboards by Valley Electric Company and ASET in October, 1994. They reported multiple problems with the circuit breakers including failure to meet the test criteria of opening under simulated fault conditions and had defective ground fault sensors.

The major loads in the stadium are:

- Suites and the Administration Building with associated separate mechanical systems.
- Upper and Lower Press with audio amplifiers for the seating bowl public address system.
- Light ring, with approximately 950 sports light fixtures, which are also utilized for maintenance, house lighting, and emergency lighting.
- CMR air handlers around the building with associated hot and chilled water pumping stations.
- Restaurant, main kitchen and concession stands.
- Scoreboard and ribbon boards.
- Emergency power system.
- General concourse and exterior lighting.
- Arena floor power distribution for floor events

SCL meter readings for the last complete year of operation (1993 - 1994) indicate that one of the five services is overloaded and another is at capacity. The result is that an undervoltage problem occurs during peak event loading conditions. The SCL transformer's output voltage drops as the load increases to capacity. The undervoltage is further exacerbated by the aluminum feeders installed in the original construction which have higher resistance and losses than if copper conductors had been used. Additional switches and loads have

FOR: EILEEN HILEMAN

been added to the bus duct and copper feeders have been installed to the newer equipment.

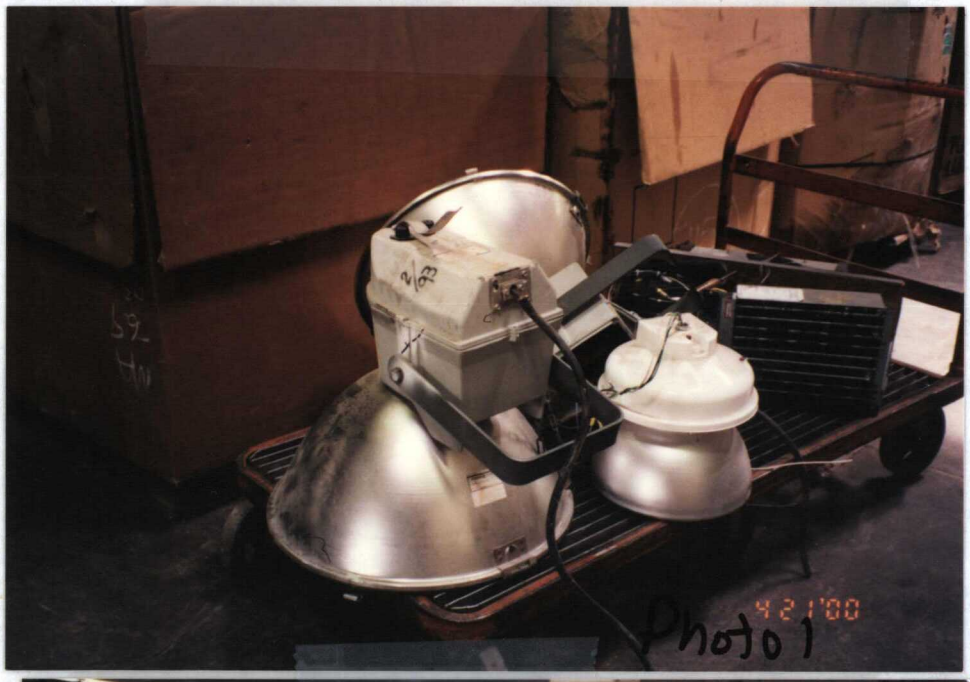
Utility service by SCL for the Energy Plant is provided by a single 24 KV feeder to an outdoor oil-filled pad mount 6000 KVA transformer which is coupled to the Plant's 5 KV distribution switchgear. The 5 KV bus feeds the three chillers in the building. The line-up includes a step-down transformer to 480 Volts and a distribution section feeding Motor Control Centers (MCCs) and 480 Volt panels in the building (photo E-3). The 480 V and 208/120 V equipment is in good condition and has capacity for accommodating a future chiller and it's associated equipment. The main transformer is over 30 years old and testing by SCL indicates deteriorating insulation. SCL has scheduled the transformer for replacement. The energy plant contains the boilers, chillers and associated pumps, air compressors and support equipment to serve the stadium air distribution systems. The only provision for back-up power in case of a prolonged power outage is a primary switching scheme by SCL in one of the stadiums main transformer vaults.

The original lighting schemes for the stadium essentially can be grouped into three categories; public spaces, support or employee areas, and the sports lighting. The parking lot lighting consists of a number of high mast poles, approximately 120 ft tall, with (5) 1000 watt high pressure sodium fixtures on each pole. The public spaces and exterior ramp lighting is primarily illuminated with 300 Watt incandescent fixtures. This requires frequent bulb replacement and is highly inefficient and costly as compared to more current lighting methods. The support and employee areas are generally lit with fluorescent or HID sources. The sports lighting uses primarily 1000 Watt Metal Halide fixtures mounted on the light ring. The ballasts and lamps on the fixtures have recently been replaced. The distribution panels on the light ring for the sports lights do not have adequate clearances and create a potential safety hazard for personnel working on the light ring (photo E-4). There is remote control of the sports fixtures from the Arena level Security office (photo E-6). However, the controls have minimal zoning capability as indicated by the shielding banners that are installed in front of the fixtures above home plate when the facility is used for baseball. Light fixture switching for the remainder of the facility appears to be controlled by local toggle switches or panel circuit breakers.

ATT XI

PHOTOGRAPHY LOG
TOTAL RECLAIM
SEATTLE, WASHINGTON

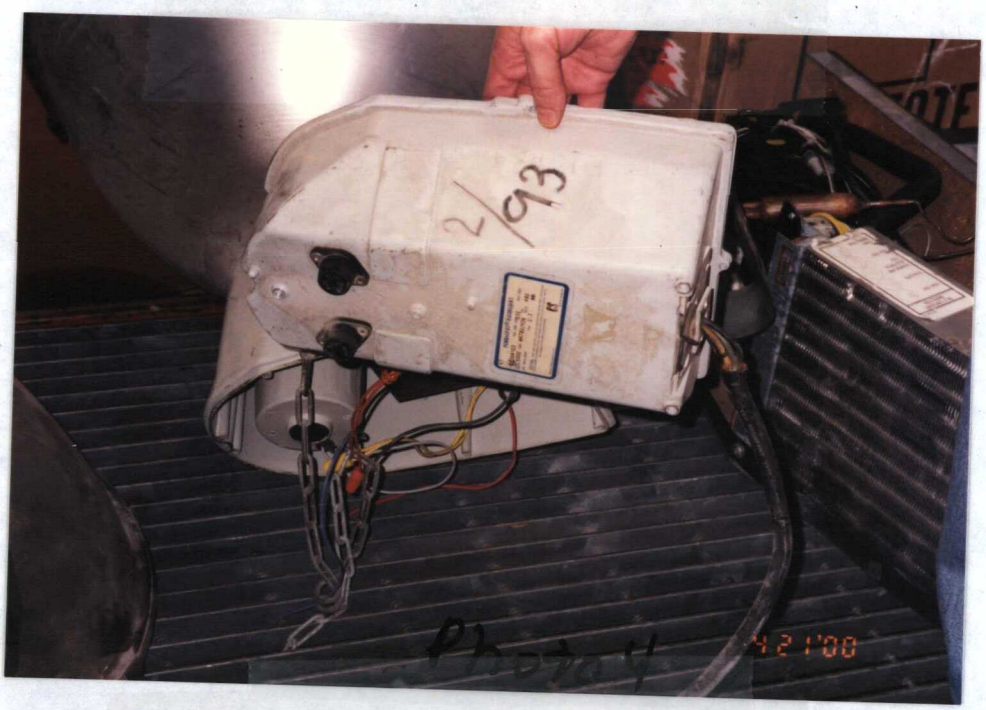
Photograph 1 taken by Eileen Hileman on April 21, 2000, at Total Reclaim, Seattle, Washington. Photograph 1 shows the type of light fixtures that were in the light ring within the Kingdome. These lights that were removed contained non-PCB ballasts.



Photograph 2 taken by Eileen Hileman on April 21, 2000, at Total Reclaim, Seattle, Washington. Photograph 2 shows an type of hanging lamp that was also in the Kingdome.


4 2 1'00

Photographs 3 and 4 taken by Eileen Hileman on April 21, 2000, at Total Reclaim, Seattle, Washington. Photographs 3 and 4 show a non-PCB capacitor and cover.



Photograph 5 taken by Eileen Hileman on April 21, 2000, at Total Reclaim, Seattle, Washington. Photograph 5 shows Mr. Zirkle demonstrating how the light fixtures could be opened (the fixture was hinged) so that the bulbs could be removed prior to implosion.

Photograph 6 taken by Eileen Hileman on April 21, 2000, at Total Reclaim, Seattle, Washington. Photograph 6 shows the remaining excess empty drums that were used to store and transport mixed ballasts during the removal work at the Kingdome.

Photograph 7 taken by Eileen Hileman on April 21, 2000, at Total Reclaim, Seattle, Washington. Photograph 7 shows an drum containing PCB ballasts (not from the Kingdome). There was no start accumulation date on the drum.